

REPORT
OF THE
DAIRY AND COLD STORAGE COMMISSIONER

FOR THE
Year ending March 31, 1908

Introduction.

Part I.—Dairying Division.

Part II.—Report of the Assistant Dairy Commissioner.

Part III.—Fruit Division.

Part IV.—Extension of Markets Division.

Part V.—Cold Storage Division.

Part VI.—Visit to Great Britain and Holland.

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EXCELLENT MAJESTY

1908

[No. 15a—1908.]

APPENDIX

TO THE

REPORT OF THE MINISTER OF AGRICULTURE

BEING THE

REPORT OF THE DAIRY AND COLD STORAGE COMMISSIONER

OTTAWA, March 31, 1908.

To the Honourable

The Minister of Agriculture.

SIR,—I have the honour to submit my report, as Dairy and Cold Storage Commissioner in your department, for the year ending March 31, 1908.

Although the work of the several divisions of this branch is closely related and cannot be separated fully, it is presented for the sake of clearness in six parts as follows:—

Part I. Dairying Division.

Part II. Report of the Assistant Dairy Commissioner.

Part III. Fruit Division.

Part IV. Extension of Markets Division.

Part V. Cold Storage Division.

Part VI. Visit to Great Britain and Holland.

Dairying.—The branch has not conducted many lines of active dairy work during the year, but there is always a large amount of correspondence arising out of various matters connected with the industry. Your Commissioner took a strong stand at the beginning of the season against the practice of shipping cheese to Great Britain in a green condition, and was able to quote from opinions, given by importers in the old country, to the effect that the practice, if continued, would be detrimental to the cheese industry, by curtailing the consumption of cheese and thus lessening the

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demand for it. An effort was made to impress the factorymen with the importance of the question, by means of circulars sent out, and addresses delivered at some of the cheese boards. I am pleased to report that these representations were followed by improvement in some districts.

The Cow Testing Associations have been continued, and some very interesting figures will be found in Part I, which have been compiled from the records by Mr. C. F. Whitley, who has charge of the details of this work.

Part I. also includes an interesting and instructive report by Mr. George H. Barr, who was acting official referee of butter and cheese at Montreal during the season. Mr. Barr, with his good judgment and thorough practical knowledge of dairy work, is proving himself to be a very useful and reliable officer.

The Assistant Dairy Commissioner, Mr. J. C. Chapais, has written a report of his year's work, principally in the French speaking districts of the province of Quebec, where he has addressed numerous dairy and fruit meetings, and visited several of the factory syndicates in company with the inspectors appointed by the Dairymen's Association of the province of Quebec. Mr. Chapais has also given some assistance in the way of lectures at the St. Hyacinthe Dairy School. Mr. Chapais has his residence and office at St. Denis (en bas), Que.

Fruit.—That part of the report which deals with the work of the Fruit Division has been prepared by Mr. A. McNeill, chief of the division. Mr. McNeill's energy, devotion to duty and thorough grasp of the fruit situation have enabled him to accomplish much for the benefit of the industry. He has been given a pretty free hand in dealing with the work assigned to him. The Dominion fruit inspectors report to him and carry on their work under his immediate supervision. He has also handled the monthly Fruit Crop Report, issued by this branch.

The fruit inspectors, with the experience of previous years to help them, have covered more ground than in any previous year, as a reference to Part III. of this report will show. The position is a difficult one, often unpleasant, but I have reason to believe that the inspectors, as a whole, have performed their duties in a creditable manner. The season was an extraordinary one and the fruit inspection presented unusual difficulties. The very nature of the work precludes the possibility of pleasing every person.

Judging from the experiences of the past year, it would seem to be necessary to increase the staff of fruit inspectors before the beginning of another season.

Extension of Markets.—Part IV. of this report, in which is presented the work of the Extension of Markets Division, has been prepared by Mr. W. W. Moore, chief of that division. Under this head come the inspection of the iced car services, the cargo inspection at Canadian and British ports, and any other work which may be undertaken with a view of improving the handling and transportation of Canadian perishable products, and the extension of the markets for such products.

The work of the division is organized and conducted on the theory that the surest and best way to extend the market for any product is to deliver to the customer a first class article in the best possible condition.

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The grower or manufacturer may produce fruit, butter, cheese, &c., of the very choicest quality, but if it is spoiled in the handling, or in transit to the consumer, the skill and care which may have been exercised in its production go for nothing.

It is only fair to acknowledge the capable manner in which Mr. Moore has performed his duties as supervisor of the work of this division. The degree of efficiency which has been attained may be credited in a large measure to his thoroughness and good judgment. Having had an opportunity during the year of investigating, on the spot, the work of the cargo inspectors in Great Britain, I desire to put on record my appreciation of the faithful and efficient manner in which their duties have been performed. Mr. A. W. Grindley, the chief inspector, has served the department well in other ways, notably in connection with the purchase of seed grain for the Northwest.

Cold Storage.—The routine administration of 'The Cold Storage Act' of the session of 1906-7 having been assigned to this branch, has naturally increased the work and the importance of the Cold Storage Division. The division also deals with the bonuses for creamery cold storage, and the arrangement of the iced car and other cold storage services. Part V. of this report, which covers cold storage, has been written with a view of giving some information to producers of food products rather than to the cold storage engineer or expert. We have not been carrying on any work during the year calculated to furnish new data on the subject. We hope to make some tests and experiments during the coming season which should be of general interest.

Mr. J. G. Bouchard, who has been attached to the Cold Storage Division as Inspector of Creamery Cold Storages in connection with the payment of bonuses, has also rendered good services as a creamery and butter making expert.

Mr. R. J. Cochrane, who was connected with cold storage projects for some years before joining the service, is now attached to the Cold Storage Division.

Visit to Great Britain and Holland.—Having been appointed Canadian Government representative to the Third International Dairy Congress at The Hague, Holland, September 16 to 20, I took advantage of the occasion to visit the chief produce markets in Great Britain for the purpose of keeping in touch with the situation, and the position of Canadian produce on those markets. I also availed myself of the opportunity which a visit to Holland afforded, of spending a few days in the country districts for the purpose of studying the methods of intensive dairy farming which are followed there. A report on the Dairy Congress, some impressions of Holland, and information gathered in Great Britain, will be found in Part VI.

ACKNOWLEDGMENTS.

It is my pleasure to again bear testimony to the faithful work done by the officers and employees of this branch of your department. Their loyalty, devotion to duty, and general diligence have made the matter of maintaining proper discipline and efficiency exceedingly light and easy.

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In connection with my visit to Great Britain, I am indebted to Lord Strathcona, the High Commissioner for Canada, and the Secretary, Mr. W. L. Griffith, Esq.; to Messrs. W. A. MacKinnon, Bristol, P. B. Ball, Birmingham, and P. B. McNamara, Manchester, Trade Commissioners for the Department of Trade and Commerce; to officials of the Department of Agriculture and Technical Instruction for Ireland; and to the National Cider Institute for assistance in furthering my enquiries.

I also wish to record my appreciation of the valuable aid received from *The Journal of Commerce*, and *The Courier*, Liverpool; *The Guardian* and *The Grocers' Review*, Manchester; *The Herald*, *The Scottish Trader*, and *The Scottish Farmer*, Glasgow; *The Grocer*, *The Morning Post*, and *The Canada Gazette*, London; and *The Western Dairy Press*, Bristol. The columns of these prominent journals were freely opened to reports of meetings; they contained many kindly editorial comments, and I was asked to furnish for publication several special articles dealing with Canadian trade, and in line with the object of my mission.

I have the honour to be, sir,

Your obedient servant,

J. A. RUDDICK,

Dairy and Cold Storage Commissioner.

REPORT

OF THE

DAIRY AND COLD STORAGE COMMISSIONER

FOR THE

FISCAL YEAR ENDING MARCH 31

1908

PART I.—DAIRYING DIVISION.

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PART I.—DAIRYING.

THE SEASON, 1907.

The season of 1907 was marked by very dry weather and consequent shortage of feed in some of the most important dairy districts. The scarcity prevailed during August and September, when the cows were on pasture, and has been severely felt during the winter months. Some farmers found it necessary to reduce the size of their herds, because of their inability to provide sufficient winter feed. The poorest cows were naturally the ones disposed of, and as the poorest cows in the average herd are often unprofitable, the loss may not prove to be as great as it may have appeared to be.

It is to be hoped also that dairy farmers will realize the advisability of providing against dry seasons by growing more corn. Previous to 1907, we have had a succession of good years, which has probably engendered a feeling of security that is not warranted by average climatic conditions. Apart from being an insurance against short pasturage or failure of the hay crop, corn is the cheapest and best winter feed which can be provided in the principal dairy districts, especially if preserved in the form of silage. If the lesson which has been taught by the experiences of 1907 has been learned by the dairy farmers in the affected districts, it will in the end prove to have been one of those proverbial 'blessings in disguise.'

The high level of prices which prevailed, especially for cheese, was some compensation for the shortage in the milk, so that on the whole, the year has been a fairly satisfactory one.

The relatively high prices paid for cheese had the effect of inducing many of the combined factories to continue to make cheese instead of butter. This fact, coupled with the increasing home demand, has resulted in materially reducing the exports of butter, so much so that the record for the season of 1907 is the lowest for many years. This will be a decided disadvantage if the exports are to be revived in the future, because much lost ground will have to be recovered; but it is doubtful if we shall have much surplus for export as long as prosperous times and the present rate of immigration continue.

DECLINE IN EXPORTS.

Disappointment has been expressed in some quarters at the slight falling off in the total exports of dairy produce, which is taken as indicating a decline in the industry. This is a mistake which arises from the habit of estimating the progress of the industry upon the export end of the business, instead of upon the total production. That basis served fairly well during the years when the annual growth of population was comparatively small, but in recent years, for obvious reasons, it has proved to be less reliable. The increased prosperity of the people generally has also been a somewhat indeterminable factor, but there is no doubt that butter is spread on the bread much thicker when the family exchequer is in a flourishing condition than it is when funds are low.

INCREASED HOME CONSUMPTION.

A fair estimate of the increase in the value of the home consumption of butter, cheese and milk for 1907 over that of 1900 places it at \$10,000,000. If this amount

were added to the value of the exports for 1907, the total would be largely in excess of any previous record.

The only annual statistics of the dairy produce trade, which are available, are those which are obtained from outward entries at the customs ports, but estimates based on the figures of the decennial census of 1901 would go to show that the home consumption of butter and cheese is nearly equal in value to that which is exported. The following tables, prepared by the Commissioner of Census and Statistics, are interesting in this connection.

TABLE I.—PRODUCTION OF BUTTER AND CHEESE IN CANADA BY PROVINCES IN THE YEAR 1900 AS SHOWN BY THE CENSUS OF 1901.

Provinces.	BUTTER.			Cheese Factory made.
	Home made.	Factory made.	Total made.	
	Lbs.	Lbs.	Lbs.	
Canada.....	105,343,076	36,066,739	141,409,815	220,833,269
British Columbia.....	1,092,555	395,808	1,488,363	.....
Manitoba.....	8,676,661	1,557,010	10,233,671	1,289,413
New Brunswick.....	7,842,533	287,814	8,130,347	1,892,686
Nova Scotia.....	9,060,742	334,211	9,394,953	568,147
Ontario.....	55,378,568	7,559,542	62,938,110	131,967,612
Prince Edward Island.....	1,398,112	562,220	1,960,332	4,457,519
Quebec.....	18,357,188	24,625,000	42,982,188	80,630,199
The Territories.....	3,536,717	745,134	4,281,851	27,693

TABLE II.—PRODUCTION OF BUTTER AND CHEESE IN CANADA, BY PROVINCES, IN THE YEAR 1900, AS SHOWN BY THE CENSUS OF 1901, AND THE EQUIVALENTS OF AGGREGATE PRODUCTIONS CONVERTED TO BUTTER AND CHEESE RESPECTIVELY, AT A RATE OF 1 POUND OF BUTTER EQUALS 2½ POUNDS OF CHEESE.

Provinces.	Butter made.	Cheese made.	Equivalent of Butter and Cheese to	
			Butter.	Cheese.
	Lbs.	Lbs.	Lbs.	Lbs.
Canada.....	141,409,815	220,833,269	229,743,123	574,357,807
British Columbia.....	1,488,363	.....	1,488,363	3,720,908
Manitoba.....	10,233,671	1,289,413	10,749,437	26,873,590
New Brunswick.....	8,130,347	1,892,686	8,887,421	22,218,554
Nova Scotia.....	9,394,953	568,147	9,622,211	24,055,530
Ontario.....	62,938,110	131,967,612	115,725,155	289,312,887
Prince Edward Island.....	1,960,332	4,457,519	3,743,340	9,358,349
Quebec.....	42,982,188	80,630,199	75,234,268	188,085,669
The Territories.....	4,281,851	27,693	4,292,928	10,732,320

NOTE.—The whole number of milch cows in the Dominion in 1901 was 2,408,677, and computed at an average yield of 3,000 pounds of milk per cow in the season the possible total production would be 280,000,000 pounds of butter, or 722,600,000 pounds of cheese.

It is probable that a demand for more frequent statistics of the dairy industry will be met by an effort on the part of the Census and Statistics Branch of the Department of Agriculture, to obtain annual or at least periodical returns during the interval between the decennial census years. The apparent impossibility of persuading the producers to supply the information required has made the collection of such statistics a matter of great difficulty in the past. It is to be hoped that an interest in the welfare of their industry will induce dairymen to co-operate in future attempts.

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THE PROGRESS OF DAIRYING IN CANADA.

It must be admitted that the dairy industry has not shown the same rate of expansion in recent years that it did during its boom days. This statement does not imply that there is any lack of interest in it, or that it has ceased to be as attractive as it formerly was. The real reason is that the territory where dairying is likely to be successful in Ontario and Quebec—the two principal dairying provinces—is now pretty well occupied, and there is not the field for expansion that there was 10 years ago. With the exception of a few localities in the extreme southwestern part of Ontario, where an attempt was made to establish cheese factories some years ago, all the old districts are holding their own.

The buttermaking industry continues to grow in Northern Alberta, and there are signs of a revival of the creamery business in Manitoba and Saskatchewan. The crop conditions of 1907 were favourable to the development of mixed farming in those provinces.

IMPROVEMENT IN BUILDINGS.

It is gratifying to note that there is a tendency to provide more permanent and more sanitary factory buildings to replace the unsuitable and temporary structures which have in many cases done duty too long. Most of the new factories are being provided with cool curing rooms, and no factory is now considered to be quite up-to-date without this equipment. The 'Ruddick' system for cool curing room construction is being generally adopted.

One of the chief obstacles in the way of having more general improvement in factory buildings is the absurdly low rate for manufacturing which prevails. It cannot be urged too often that patrons are following a shortsighted policy in this respect. If the manufacturer, especially at proprietary factories, does not receive a fair remuneration for carrying out his part in the chain of production, he is bound to resort to cheapness, and that means poor service and loss to those who own the product.

CONDENSED MILK.

Several new condenseries have been started during the year, and this branch of the dairy industry is making some headway in Canada.

THE OFFICIAL REFEREE OF BUTTER AND CHEESE AT MONTREAL.

The position of Official Referee of Butter and Cheese at Montreal was vacant during the year 1906. To meet the requests of cheese boards and individual salesmen, it was decided to assign an officer to this work for the season of 1907. Mr. Geo. H. Barr, who joined the dairy staff in April last, was named as acting referee, and he fulfilled the duties of the position in a very acceptable manner.

In previous years it was the practice for the referee to make examinations, and give certificates, upon the request of the buyer only, if the salesman could not be reached immediately, so as to avoid delay and the risk of defects in the cheese or butter becoming more pronounced while waiting for the authority of the salesman. We still think that is the best way, because it is certainly in the interest of the owner of the cheese. The salesmen, however, pretty generally expressed themselves against that plan, insisting that they should be consulted before the referee is called in. As the salesmen undoubtedly have the right to be consulted, and to say whether their cheese or butter shall be examined by the referee or not, regulations were made to meet their views. The delay in making examinations was obviated in many cases by the salesmen giving the referee a standing order, in writing, to examine his cheese or

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butter at any time on the sole request of a buyer. The following circular was issued in reference to this work, giving the rules and the standards on which the cheese are graded by the referee:—

DEPARTMENT OF AGRICULTURE, BRANCH OF THE DAIRY AND COLD STORAGE
COMMISSIONER.

OFFICIAL REFEREE OF BUTTER AND CHEESE.

I am authorized by the Honourable the Minister of Agriculture to announce that an officer of the Dairy Division will be stationed at Montreal to act as Official Referee of Butter and Cheese after May 15th next, in compliance with the urgent requests received from dairymen in various districts.

In view of the representations which have been made by salesmen, the Referee will act only on request of both buyer and seller. While it is recognized that the delay which may ensue before the salesman can be communicated with, will result in any defect in the quality of the cheese or butter becoming more pronounced, and that it may interfere with the prompt exportation of the lot in question, the right of the seller to be consulted before any reference is made cannot be denied.

Any salesman who desires to avoid the risk of increased loss, consequent on the delay of final inspection, may do so by giving the Referee a standing order, in writing, authorizing the examination of his cheese or butter at any time on request of buyer alone. Such authorization must come direct from the salesman himself. Verbal notices will not be accepted. Any authorization of this kind may be cancelled by the salesman giving due notice to that effect.

In giving certificates on the quality of butter or cheese, the Referee will be guided by the classification and standards adopted two years ago. In this classification 'First Grade' is equivalent to 'Finest,' a term used for many years to denote first-class quality; and 'Under Finest' is divided into second and third grades, with clear definitions for each grade. The advantage to the seller of having the grades clearly defined and of having three grades instead of two must be obvious to all.

The following are the classifications and standards referred to:—

Standards for Grading Cheese.

First Grade—

Flavour.—Clean, sound and pure.

Body and Texture.—Close, firm and silky.

Colour.—Good and uniform.

Finish.—Fairly even in size, smoothly finished, sound and clean surfaces, straight and square.

Boxes.—Strong, clean, well made and nailed. Ends to be of seasoned timber. Close fitting. Weights stencilled or marked with rubber stamp.

Second Grade—

Flavour.—'Fruity,' not clean, 'turnipy,' or other objectionable flavour.

Body and Texture.—Weak, open, loose, 'acidic,' too soft, too dry.

Colour.—Uneven, mottled, or objectionable shade.

Finish.—Very uneven in size, showing rough corners, black mould, dirty or cracked surfaces, soft rinds.

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Boxes.—Too large in diameter; top edge of box more than $\frac{1}{2}$ an inch below the top of the cheese. Made of light material. Ends made of improperly seasoned material.

Third Grade—

Flavour.—Rancid, badly ‘off,’ anything inferior to Second Grade.

Body and Texture.—Very weak, very open, showing pinholes or porous, very ‘acid,’ very soft or very dry.

Colour.—Badly mottled, or very objectionable shade.

Finish.—Anything worse than second grade.

Boxes.—No question of boxes sufficient to make Third Grade if other qualities are good.

Explanations.

The definition for first grade cheese is practically the same as what was adopted several years ago for ‘Finest’ quality, except under the head of ‘Boxes,’ wherein there are some new and very necessary requirements.

The standard for first grade does not imply perfection. For instance, a ‘clean, sound and pure’ flavour means only an absence of bad flavour. A strictly fancy cheese must not only possess this negative quality, but must have a positive quality in a typical cheese flavour, which many first grade cheese never have.

It would be impossible to define exactly the qualities or defects which may appear in cheese. The standards given are intended to indicate the range of quality for the different grades rather than to establish hard and fast rules to guide the grader.

The expression ‘good colour’ means that the colour must be of a proper shade. There are cheap, inferior cheese colours used, which do not give the proper shade no matter what quantity is used.

The expression ‘clean surfaces’ in the definition for First Grade does not exclude from that grade cheese with a slight growth of blue mould, although it is desirable that the cheese should not show any signs of mould. ‘Black mould,’ (see definition for Second Grade), is simply the advanced stage of the ordinary blue mould.

The following scale of points will indicate the relative values of the different divisions of quality: Flavour, 40; body and texture, 30; colour, 15; finish and boxing, 15; = 100.

It is obvious that a defect in flavour of a certain degree counts nearly three times as much in determining the grade as a defect in finish or boxing of the same degree.

Cheese which are strictly sour, or otherwise inferior to Third Grade, will be designated as ‘culls,’ for which there is no classification.

Any lot of cheese shall be considered third grade if it shows three or more defects of Second Grade class.

If there are not more than 15 per cent of defective cheese in any lot, the inferior ones may be sorted out and classed separately. If more than 15 per cent are defective, the classification for the defective cheese may apply to the whole lot.

This does not apply when inferior cheese have been properly marked so as to be identified, in which case the inferior cheese shall be treated as a separate lot.

Standards for Grading Creamery Butter.

First Grade—

Flavour.—Sound, sweet and clean.

Body and Grain.—Waxy; not too much moisture.

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Colour.—Even, no streaks or mottles, not too high.

Salting.—Not too heavy if salted butter. Salt all dissolved.

Finish.—Good quality parchment paper lining, neatly arranged. Package well filled; bright, even surface.

Packages.—Well made, of good material, and clean. Boxes to be of right size to hold 56 lbs. of butter when properly filled. Paraffined on inside. Neatly branded. Tubs to be lined with parchment paper of good quality.

Second Grade—

Flavour.—Not quite clean, or other objectionable flavour.

Body and Grain.—Salvy; overworked; too much moisture.

Colour.—Slightly mottled or streaky; too high, or objectionable shade.

Salting.—Too heavy; salt undissolved, or unevenly distributed.

Finish.—Very light or poor quality parchment paper lining; lining not arranged to protect butter; mould on parchment paper. Rough uneven surface. Package not properly filled.

Packages.—Rough, badly made, or of poor or unseasoned material, including sapwood. Dirty packages. Uneven weights.

Third Grade—

Flavour.—Very stale; very strong stable flavour, or anything inferior to Second Grade.

Body and Grain.—Very salvy; 'mushy;' mould in butter.

Colour.—Very mottled or otherwise inferior to Second Grade in regard to colour.

Salting.—No question of salt alone sufficient to make Third Grade if other qualities are up to First Grade.

Finish.—No parchment lining. Very rough finish. Dirty surface.

Packages.—Inferior to Second Grade.

Explanations.

It is difficult to explain exactly the qualities or defects which may appear in butter. The standards which have been adopted are intended to indicate the range of quality for the different grades, rather than to establish hard and fast rules for the guidance of the grader.

'Fresh,' or saltless butter will be judged on the same standards as for salted butter, by leaving the matter of salting out of the consideration.

A package is not considered well filled if the butter is more than half an inch below the top of the package.

It is very important that all boxes should hold only 56 lbs. No other weight should be marked thereon. Tubs should be of uniform size and weight.

The following scale of points will indicate the relative values of the different divisions of quality: Flavour, 40; Body or Grain, 25; Colour, 10; Salting, 10; Finish and Packing, 15; = 100. It is obvious that a defect in flavour of a certain degree counts nearly three times as much in determining the grade as a defect in finish or packing of the same degree; and so on.

The expression 'too much moisture' applies to all butter which contains over the legal limit of 16 per cent of water, or to any butter that according to the custom of the trade would be described as containing too much water. (From many tests made finest Canadian butter does not contain, or should not contain, on the average, over 13 per cent of water.) The Official Referee will not be expected to determine the actual percentage of water.

'Too heavy salt' means more salt than is generally demanded by the trade for salted butter.

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‘Too high colour’ means over-coloured, or too much colouring material used. ‘Objectionable shades’ or unnatural colours are those which result from the use of inferior or unsuitable colouring material.

J. A. RUDDICK,
Dairy and Cold Storage Commissioner.

OTTAWA, Ont., April 20, 1907.

Mr. Barr has submitted the following report on his work as Acting Referee for 1907.

Mr. J. A. RUDDICK,
Dairy and Cold Storage Commissioner,
Ottawa.

SIR,—I have the honour to submit my report as Acting Official Referee for Butter and Cheese at Montreal for the season of 1907. I began my duties on May 16 and finished on November 26.

LOTS OF CHEESE EXAMINED BY MONTHS AND WITH GRADES GIVEN.

MONTH.	1ST GRADE.		2ND GRADE.		3RD GRADE.		CULLS.		TOTAL ALL GRADES.	
	Lots.	Boxes.	Lots.	Boxes.	Lots.	Boxes.	Lots.	Boxes.	Lots.	Boxes.
May.....			4	107					4	107
June.....	1	40	35	1,846	7	316			43	2,202
July.....	3	92	92	4,902	21	1,238			116	6,232
August.....	1	28	54	2,591	8	317	2	13	65	2,949
September.....			28	1,088	2	77			30	1,165
October.....			14	840	3	74			17	914
November.....	1	72	12	379					13	451
	6	232	239	11,753	41	2,022	2	13	288	14,020

Of the cheese examined 2 per cent are placed 1st grade; 83 per cent are placed 2nd grade, and 14 per cent are placed 3rd grade. The chief defects in the cheese may be classed as follows:—

DEFECTS IN FLAVOUR.				DEFECTS IN TEXTURE.			DEFECTS IN COLOUR.	OTHER DEFECTS.
Not Clean.	Fruity.	Rancid.	“Off.”	Loose and Open.	Acidy or Mealy.	Too soft or weak.	Uneven or too Pale.	Poor finish Mould Stains.
p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.
73	6½	6	3.8	60	33	29	22½	15

It will be seen that ‘Not clean in flavour’ is the chief defect, and it is due, no doubt, largely to taints in the milk. Yet quite frequently the flavours appeared to be caused by the use of bad starters and impure water at the factories. There were very few cases where defect in flavour could be described as ‘feed’ flavours. In the spring a numbr of lots had a ‘leeky’ flavour, caused, no doubt, by the cows eating leeks.

‘Loose and open texture,’ which is the next greatest defect, appeared to be caused by leaving too much moisture in the curds, either by insufficient cooking or not

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stirring the curds sufficiently when the whey is removed, and by salting the curds too soon.

‘Acidy’ or ‘mealy’ texture is a very common defect and is usually due to too much acidity in either the milk or curd, and to the use of too much salt on the curd.

‘Soft or weak body’ is a defect very common in the extreme eastern part of Ontario and some districts in Quebec. Insufficient cooking of the curd, and leaving an excessive amount of moisture in the curd after the whey is removed, not only gives a soft or weak body, but often injures the colour as well.

Quite frequently the colour was mottled by mixing in old curd, especially about the time the cows were going out on the grass.

BOXES AND BOXING.

There is still room for improvement in the cheese boxes. They are made too light, and even after being coopered, many shipments present anything but an attractive appearance as they are being loaded on to the steamships. Improvement can also be made in putting on the factory brands and weights of the cheese. The factory brand should be put on the lap close to the edge, and the weight figures stencilled on just beside the lap of the box.

SMALL FACTORIES SHOW LARGEST PERCENTAGE OF POOR CHEESE.

The following figures will give a fairly good idea as to the size of the factories which are turning out inferior cheese. In most cases the number of boxes in each lot represents a week’s make of cheese: 6·5 per cent of the lots examined contained over 100 boxes; 93·7 per cent of the lots examined contained under 100 boxes; 83·3 per cent of the lots examined contained under 70 boxes, and 43·7 per cent of the lots examined contained under 40 boxes.

Bearing in mind that about 98 per cent of the total lots examined were second and third grade, it will readily be seen that the great majority of our inferior cheese come from small factories. It does not necessarily follow that fine cheese cannot be made in small factories, but it is true that the best men cannot be secured to operate them. It requires men with decidedly greater ability to manage a large business than to manage a small one, and just as long as we have small and poorly equipped factories, just so long will there be weak or inferior cheesemakers in them, and one of the solutions for doing away with a great many of our second and third grade cheese, is larger factories and strong capable men to operate them.

LOTS OF BUTTER EXAMINED EACH MONTH.

MONTH.	1ST GRADE.		2ND GRADE.		3RD GRADE		TOTAL ALL GRADES.	
	Lots.	Boxes.	Lots.	Boxes.	Lots.	Boxes.	Lots.	Boxes.
May.....			2	47	1	27	3	74
June.			5	911			5	911
July.....			9	1,237	3	115	12	1,352
August.....	1	230	8	877			9	1,107
September.			2	82	1	42	3	124
October.....			2	43			2	43
November.			6	144			6	144
	1	230	34	3,341	5	184	40	3,755

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The defects in the butter may be classed as follows:—

	Per cent.
Not clean in flavour.....	95
Too dry and crumbly.....	12½
Too soft in body.....	7½
Colour mottled.....	40
Uneven salting.....	15
Badly finished.....	15
Two lots mouldy.	

Some flavours are difficult to describe otherwise than 'not clean,' but in the majority of cases the flavours were what is known as 'old or sour cream' flavours. As all the butter I examined came from Quebec province, it is evident that those interested in the creamery industry will have to look carefully after the milk and cream that are being delivered to the creameries. One large creamery had considerable trouble with the flavour of their butter during the early part of the season. The trouble was removed by discarding their cream vats, which were made of tinned copper. The tinning had become worn off and apparently the cream became tainted by standing in them over night.

During the month of November, some of the butter was entirely too dry and crumbly, a decidedly bad defect, and one which could be easily avoided by proper ripening and churning temperatures.

Creamery men would do well to remember that the past season has been an exceptional one in the butter trade on account of the strong local demand, which made it possible for dealers to pass many lots of butter that would not have passed inspection for export purposes.

The regulations requiring a written order from the salesmen, before cheese or butter would be inspected, had no doubt a tendency to lessen the number of calls upon the referee.

During the season I received standing orders from 51 salesmen to examine 77 different brands of cheese and butter when found fault with by the buyers, and specific orders from 59 salesmen to examine 111 different lots that had been rejected by the buyers.

The only serious objection that can be raised to this regulation which has been insisted on by the salesmen, is that defective cheese are usually growing worse, and occasionally a shipment will remain in the warehouse for a week or more after being rejected, before the referee receives authority from the salesman to examine it. The cheese sometimes are left in rooms where the temperature is so high that the quality is injured. I am pleased to say that this does not often occur, as nearly all the merchants put the rejected lots into cool rooms with the rest of the cheese. Butter is always placed in cold storage.

I consider the methods of handling and the facilities for storing cheese and butter in Montreal are such that the quality is well preserved. Some of the export firms have facilities which are not surpassed in the world and immense amounts of money are being spent each year in equipping the warehouses with modern cold storage.

It should be the duty of the salesmen of cheese and butter to acquaint themselves with the conditions which exist in the different warehouses in regard to facilities for handling their products, in a safe and reliable manner, upon arrival in Montreal.

I am of the opinion that the conditions under which butter and cheese are inspected in the warehouses in Montreal are not in the best interests of the trade, nor are they as fair to either the buyer or the seller as they should be.

IDENTIFICATION MARKS ON PACKAGES.

It is important that all inspections or examinations of butter and cheese, after sale, should determine, as nearly as possible, the actual quality of the whole lot in

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question. If the shipment contains one 'batch' of cheese, or churning of butter, of inferior quality, it is very unwise on the part of the salesman to allow the chance of the whole lot being reduced in grade by the inclusion of part, or all, of the inferior packages among those on which the average quality is arrived at. It would never do to use the trier on every package of butter and cheese. The injury thus caused would be serious. There is more or less injury, loss and disfigurement whenever the trier is applied. The general practice for determining the quality of each lot of butter or cheese at Montreal is to select a certain number of packages at random, and the quality of the whole lot is judged from the result of this examination. It is frequently unfair to the factory or creamery and sometimes it is unfair to the buyer.

If the packages were marked so as to distinguish the cheese from every 'batch' or vat, or the butter from every churning, it would then be possible to select one package from each vat or churning, and when these were examined, an absolutely correct indication of the quality of the whole lot would be obtained without unnecessary injury by use of the trier.

It often happens that the cheese from one vat, or the butter from one churning, is very inferior in quality while the rest of the shipment is quite up to the standard. When the inspection is made and the package representing this lot is found, the others bearing the same mark can then be set aside and the reduction in price figured on the actual quantity of inferior butter or cheese, instead of being averaged over the whole lot.

The following instances will suffice to illustrate the point:—

On May 31 I was asked by a salesman of a creamery to examine a lot of butter, which had been rejected by the buyer on account of flavour. The salesman picked five boxes out of the lot and I found two of these with a strong, leeky flavour. I said to the salesman, 'There may be only one churning with that flavour, but we cannot test every box in a lot of 31 boxes.' He found out from the maker afterwards that there was only one churning with this flavour. The buyer cut the price $\frac{1}{2}$ cent per pound on the whole lot, which amounted to \$8.68. If each churning had been marked and the cut had been 1 cent per pound on the inferior boxes, it would only have amounted to \$2.80.

The reverse happened with a shipment of cheese later in the season. A lot of some 50 boxes had been rejected. I found each batch numbered, a fact which the buyer was not aware of, as he had not been advised to that effect. I asked to see a box of each number, and found only the cheese bearing one number defective, which made a cut on five cheese instead of on fifty.

During the latter part of the season, after your circular on the subject was sent out, I found quite a number of cheese factories and creameries in Quebec marking each batch of cheese and churning of butter, and in more than one case they saved money by doing so.

The educational advantages of such a plan are very important. The maker, in numbering his different batches or churnings, should keep a corresponding record, with notes on the conditions and circumstances attending the manufacture of each lot. If, for instance, the cheese bearing a certain number are reported to be 'acidic,' the cheesemaker's record will give him an idea as to how this defect originated. If a certain churning of butter is said to be 'mottled' or over salted, such notes would indicate how to avoid such errors in future.

GEO. H. BARR,

Acting Official Referee of Butter and Cheese.

MONTREAL, December 31, 1907.

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IMPORTANCE OF IDENTIFICATION MARKS ON CHEESE AND BUTTER PACKAGES.

Mr. Barr has touched on a very important point in referring to the advisability of having each 'batch' of cheese or churning of butter so marked as to be easily identified when the inspection is made. The cheese should be marked as they come from the press. If the cheese are inspected in the factories it is not important whether the boxes are marked or not, but if inspection is to be made at the car door or at Montreal, the packages also must be marked. Butter, of course, can only be marked on the package. This practice has been common in western Ontario for years, and the makers there would not think of neglecting it.

The marking of the packages may be done by giving each batch of cheese or churning of butter a number, to run consecutively for each shipment, which usually covers a period of one week. Thus Monday's cheese would be marked 1, 2, 3 and so on according to the number of vats. If there are three vats in use, Tuesday's cheese would be marked 4, 5 and 6, and thus to the end of the week. Another plan would be to use both numbers and letters, the numbers to represent the vats and the letters the

1 2

day of the week put on like this: ——— ——— and so on.

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THE ADVANTAGE OF THREE GRADES WITH DEFINITE STANDARDS.

The writer has frequently urged that all sales of butter and cheese should be made on the basis of three grades, according to the standards and definitions already given on page 6. The advantage of this improvement from the standpoint of the factory is that the salesman would have fuller information concerning the degree of defect in his cheese or butter, if it was rejected on account of quality, and would then be in a stronger position to effect a fair settlement. The complaint is often heard, and we believe it is sometimes justified, that two lots of cheese or butter with the same defect are 'cut' very different amounts. This sort of thing is possible when the description is that the goods in question are simply 'under finest,' which may mean anything. With three grades established as suggested, and as used by the official referee, there would come to be recognized in a very short time a fairly definite relation in value between first and second grades. It has been argued by some salesmen and makers that the standard for first grade cheese is too high and that it cannot be reached by the average factory. Probably the best answer to that assertion is the fact that the great bulk of Canadian cheese *does* reach this standard, and would pass it anywhere. The definition of flavour for first grade simply implies that the cheese must be free from any defect in flavour. Surely no one will say that if there is anything wrong with the flavour of a cheese it can be placed in first grade or called 'finest.' Such a cheese never was and never will be anything better than second grade, or 'under finest.' The words 'clean, sound and pure' do not call for perfection in flavour by any means. The perfect flavour is rich, 'nutty' or 'cheesy,' and a large percentage of cheese which are simply 'clean, sound and pure' never have those qualities.

These two measures, the marking of the cheese and butter so that it may be accurately inspected, and the adoption of three grades instead of two ('finest' and 'under finest') as at present, mean more in the writer's judgment, to the factories, than the particular point at which the cheese or butter should be inspected.

SANITATION IN THE DAIRY.

The world wide movement looking to better conditions surrounding the production of milk and its manufacture into butter and cheese has not missed this country.

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Higher standards are being set to guide those engaged in this line of work, and stricter attention to matters of sanitation and hygiene is being insisted on. In Ontario, recent legislation, and its enforcement by the provincial dairy staff, are having a wholesome effect in improving the conditions in and around cheese factories and creameries. This in itself is bound to exert a good influence on the producers of milk, even if no further pressure were being brought to bear on them.

The milk supply of towns and cities is attracting the most attention, and considerable activity is being shown on the part of municipal authorities who have to deal with this important question. The opposition of producers to all reasonable suggestions and regulations for the improvement of market milk is as futile as it is foolish and shortsighted. If the doubt and distrust in the minds of consumers, to say nothing of positive knowledge of the unsatisfactory conditions surrounding the production of much of the milk supply, were removed by an evidence of a desire on the dairymen's part to meet the demands of modern standards, the consumption of milk would increase enormously at higher prices than those which now prevail. There are many practical proofs that this contention is correct, in the success which has attended the efforts of the wide awake milk producers to supply a high class article.

One of the difficulties in securing a reform of methods in milk production lies in the fact that the term 'cleanliness,' which is so strongly and so properly urged in this connection, is only a relative one, that conveys very different shades of meaning to different persons. Everything depends on the individual standards, which are fixed very largely by environment and custom. A practice, or a condition, which fails to offend the senses of a man who has always been accustomed to it, may be repulsive and absolutely unbearable to another. Specific rules for dealing with these questions, as far as they can be devised, are necessary to secure desirable results.

PRESERVATIVES IN MILK.

The use of preservatives in market milk should receive more attention than it does, for not only may the substance used be harmful, but its use is evidence that the milk is being produced or handled under conditions which cause it to sour quickly, or that it is being kept beyond a reasonable limit of time before being consumed.

The supervision of the milk supply should be carried beyond the point where it leaves the purveyor's hands and passes into those of boarding house, restaurant and hotel keepers. Why should those who buy their milk as an item in a bill-of-fare not be protected as well as those more fortunate people who consume it in their own homes?

THE DAIRYING INDUSTRY.

(By J. A. Ruddick.)

The following lecture, delivered before the May Court Club of Ottawa, was intended to interest those who are not familiar with the dairy situation in Canada, and to give them some idea of the importance and possibilities of the industry.

While I am pleased to have been given an opportunity of assisting in a small way in the splendid work which the May Court Club is doing in this city, I can assure you that I realize fully the difficulty of dealing with the subject on which I have been asked to speak, in such a manner as to make it interesting to an audience composed largely of young ladies.

One would need to have a more fertile imagination than I have, to be able to put much poetry into a description of the dairy industry. It is, however, not only one of the greatest industries in Canada from a material point of view, but it is one of the great industries of the world. The dairy

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industry supplies all civilized people with at least two of their most indispensable articles of food. There may not be many people induced to engage in the business of dairying from a pure love of it, but it cannot be denied that it does offer attractions to those who are obliged to consider the money getting possibilities of whatever line of effort their energies are employed in.

There are not many persons in this audience, or in the whole Dominion, for that matter, who do not derive, either directly or indirectly, some benefit from this great industry which has contributed so largely to the prosperity of Canadian agriculture. This assertion will be the more readily believed when I state that the total value of the products of Canadian dairies, including milk, butter, cheese and condensed milk, amounts to something like \$100,000,000 annually.

A very important point in this connection is the fact that while we recover, with the aid of the gentle cow, this large amount of wealth from mother earth, by the transmutation of pasturage and fodder crops into milk, the soil is not impoverished in the process, but on the contrary, is left in better condition every year to produce another \$100,000,000. If you dig a million dollars out of a gold mine, you have nothing left but a hole in the ground, and I am told that you are much surer of the hole in the ground than you are of the million dollars. In a country like ours where agriculture is the true basis of all wealth, this question of the conservation of soil fertility is of fundamental importance.

In view of these facts, I have no further apology to offer on behalf of the dairy industry.

A VARIED INDUSTRY.

A broad application of the term 'dairying industries,' would include milk production, the milk supply of towns and cities, the manufacture of butter, cheese and condensed milk and the numerous by-products obtained from the casein of milk, such as substitutes for ivory and celluloid, adhesives, woodfillers, paint, pencil erasers, toilet cream, &c., &c. But knowing the short time at my disposal, and believing that the patience and endurance of the members of the May Court Club and their friends must have limitations, I am obliged to use the term in a more restricted sense this evening. I shall confine myself, therefore, to a brief reference to the two great branches of the industry, namely, the manufacture of butter and the manufacture of cheese, with particular reference to the butter and cheese which are made in factories. It has been the common practice to base all estimates of our progress on the factory end of the business, because the home end of dairying is such an unknown quantity that accurate figures are not obtainable, although it is estimated that the milk which is used for direct consumption, and the butter which is made on farms have a value which is at least double the value of the butter and cheese made in factories.

ANCIENT ORIGIN.

The use of milk and its products as food for man dates back to the very earliest times. We find frequent mention of butter and cheese in the early books of the Bible. Cheese was known to the Greeks before the time of Homer, and Cæsar relates that the German tribes supplied the Romans with cheese in his day.

Tradition says that butter was discovered by the nomadic tribes of the east, who found that it was produced by the agitation which milk received when transported long distances on the backs of camels. It is said that in

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Arabia, even to this day, a sort of oily butter is procured by placing the milk in a vessel made from the skin of an animal, and shaking it to and fro suspended from the limb of a tree or other convenient support.

COMPOSITION OF BUTTER AND CHEESE.

Butter, as we know it, consists of the fat of milk, in solid form, mixed with a certain percentage of water, which may vary according to the skill or intention of the buttermaker, but 12 to 14 per cent is considered to be about the right proportion. Sixteen per cent of water is the legal limit in this country. The process of buttermaking is practically the same wherever scientific methods are followed, and it requires an expert to detect the slight differences of flavour and texture which may be found in well made samples of butter brought together from the ends of the earth. Of course, there is good and bad butter to be found everywhere, and it is the proportion of the two kinds produced in any country that makes or mars its reputation in this respect, rather than any distinctive quality or characteristic in the product which may be traced to locality of origin.

Cheese is made by precipitating the protein compounds of milk with rennet. The curd which is thus formed holds the fat of milk mechanically, and a certain amount of the water is also retained. A Canadian Cheddar cheese, for instance, consists, roughly speaking, of one-third fat, one-third protein or casein compounds, and one-third water.

The art of cheesemaking is infinitely more intricate and difficult than that of buttermaking. It deals with several constituents of the milk, two of which, the sugar and the casein, unlike the comparatively inert and stable fat, are peculiarly subject to bio-chemical changes, as yet not fully understood or studied by the chemist and the bacteriologist.

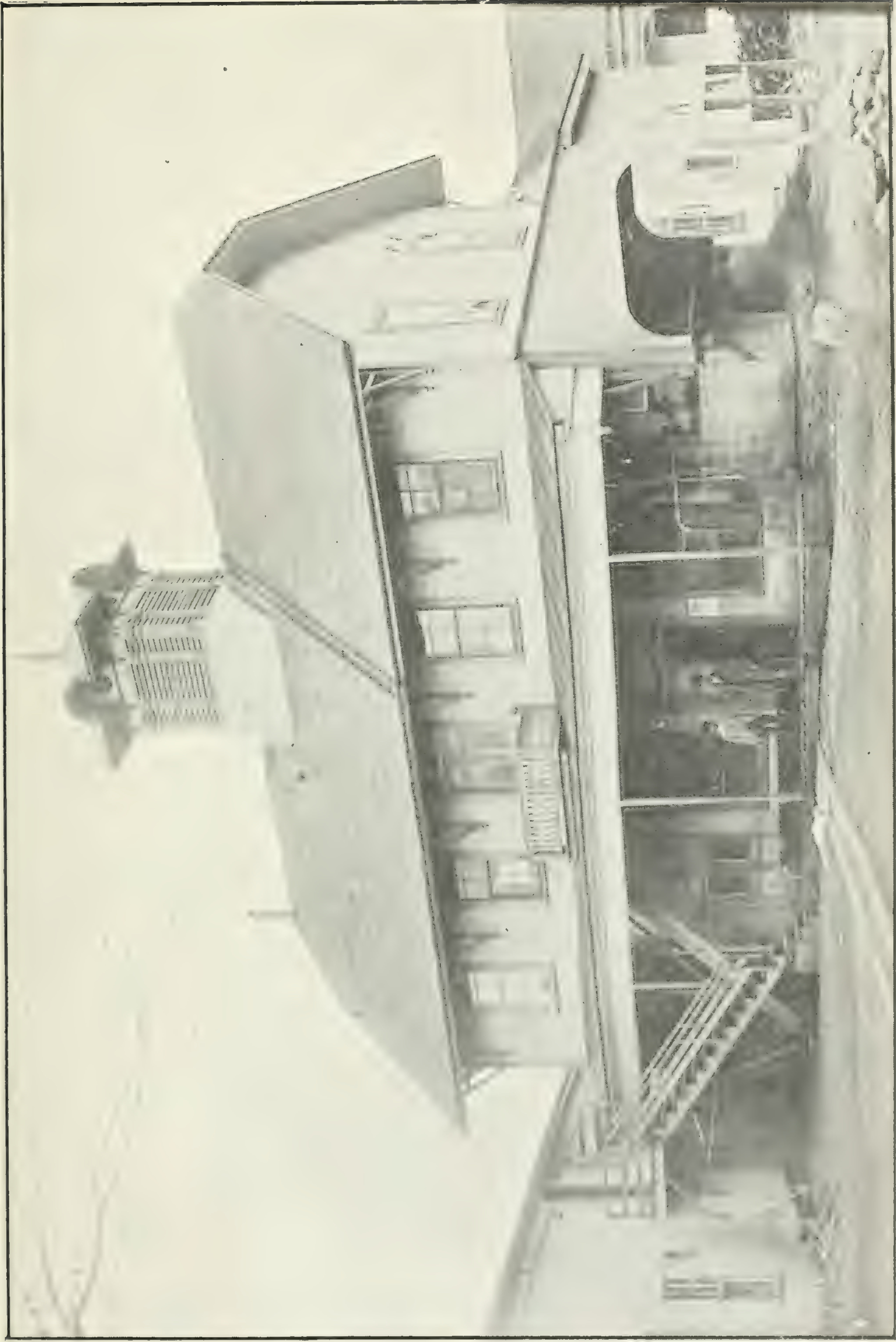
It requires only slight modifications of the process of cheesemaking to produce marked differences in the finished product. As a result, there are probably 100 distinct, different varieties of cheese made in various parts of the world, and at least 25 well known classes, varying greatly in appearance, texture and flavour—particularly in flavour.

They vary in texture from the Schabzieger of the Swiss Alps, so hard that it must be grated, or rasped, as the name suggests, to the soft and creamy French cheeses, like Brie or Camembert; in the matter of flavour, there is the mild and genteel Cheddar on the one hand, and the loud and vigorous Limburger on the other; and as for size, they range from the dainty Neufchatel, a few ounces in weight, to the ponderous Gruyère, which may weigh over 100 lbs.

THE SCIENCE OF DAIRYING.

While the preparation of cheese as an article of food is undoubtedly one of the oldest of the technical arts, the science of cheesemaking is of very recent origin. Until only twenty or thirty years ago, our knowledge of the art was almost wholly empirical, having been handed down from father to son, or more correctly speaking, from mother to daughter, each generation adding its quota of experience to the rules which then did duty for the more exact knowledge that is available to the cheesemaker of the present day.

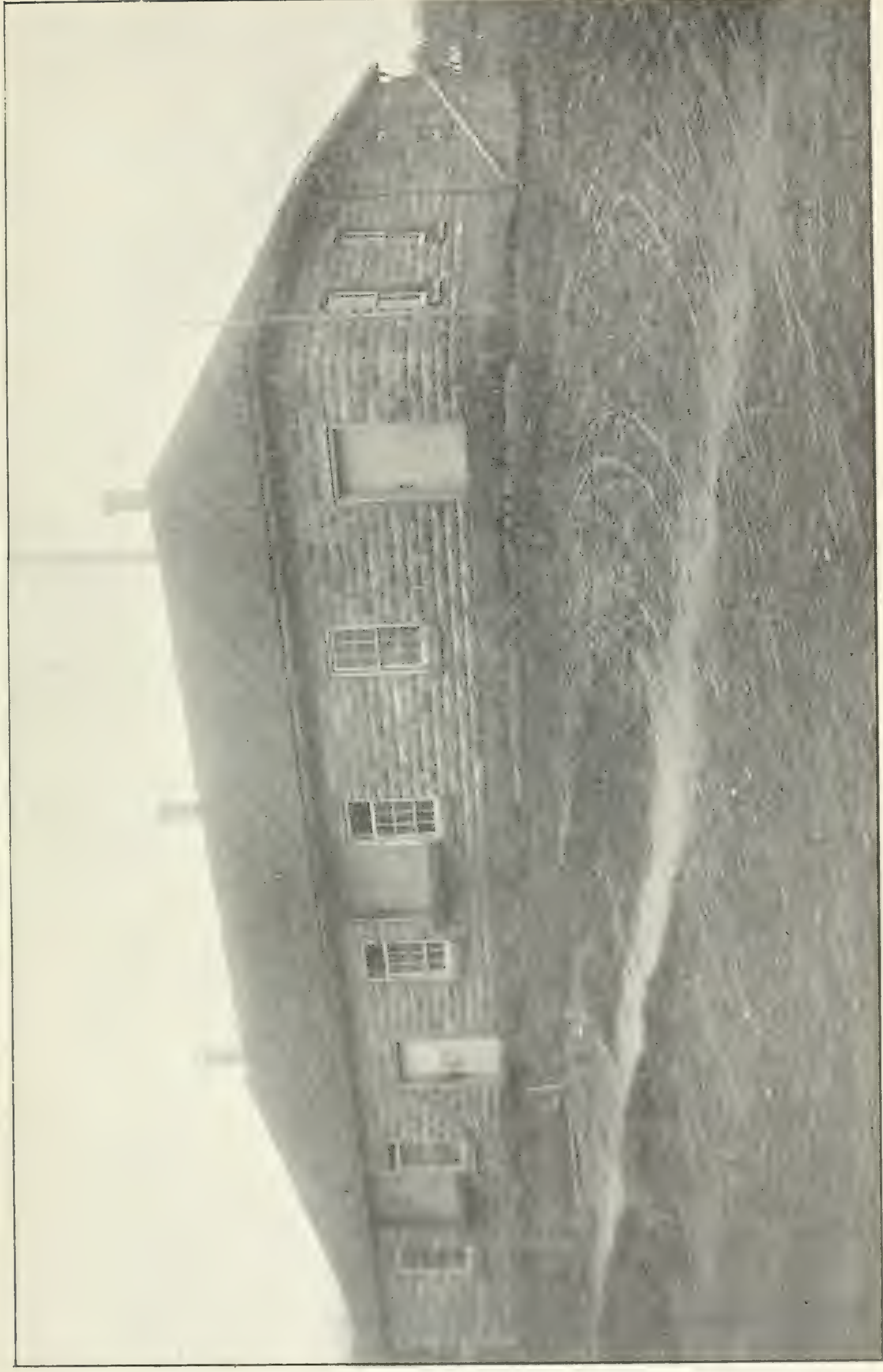
The brilliant researches and discoveries of Pasteur, although they did not include a study of milk, nevertheless blazed the track along which other scientists have followed to show us the why and the wherefore of many of the changes that take place in milk and its products. We know now that the profound changes which result from milk fermentations are not natural to



Creamery at Sabrevois, Que.



Creamery at Terrebonne, Que.



A Prince Edward County (Ont.) Cheese Factory.

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the milk itself, but depend upon the entrance of germs which are introduced either accidentally or intentionally after the milk is drawn. Thus that common phenomenon, the souring of the milk, is not due to any inherent tendency in the milk itself, but to the introduction of the *lactic acid bacilli* which split up the sugar of milk and produce lactic acid. The investigations of bacteriologists and chemists, supported by the work of practical experimenters, have established during these recent years what appears to be a sound basis for the science of dairying.

It is only fair to say here that the sum of original knowledge on this subject has received some valuable contributions through the investigations of the experts of the Canadian Departments of Agriculture and the agricultural colleges. It may also be said that Canadian cheesemakers have led the van in applying the teachings of science to the practice of their art.

But we must not pursue this phase of the subject any further, or we shall get into technicalities which would neither be profitable nor interesting to this audience. It will be more in keeping with the aims and objects of the Court in arranging the course of lectures, of which the present is one, if we now proceed to consider the origin, status and possibilities of the dairy industry in Canada.

DAIRYING IN CANADA.

The early French settlers introduced cows from Brittany, and no doubt made butter from their milk. It is quite likely that they made cheese also, and that the 'Fromage raffiné' still made on the Island of Orleans is a relic of their early efforts. Cheese of a more or less nondescript character was made for home use by the early settlers of Ontario, but neither the art nor the industry made any progress in Canada until the factory system was introduced in the year 1864. The first cheese factory was established in Oxford county, Ontario, by one Harvey Farrington, who came from New York state for that purpose. Another factory was started in Hastings county in 1866, and from that time forward the extension of the industry forged rapidly ahead in Ontario. The first cheese factory was established in the province of Quebec, in Missisquoi county, about the same time as the first ones in Ontario, but there was very little development of the industry until after the year 1880.

The dairy industry has not grown as much in New Brunswick or in Nova Scotia as one would expect to find in districts so well adapted for it. Fruit growing, lumbering and fishing have divided the attention of the farmers to some extent, and dairying does not prosper unless it is made the special business of the farm. There are, however, a number of successful cheese factories and creameries in these two provinces, and they supply the local demand for butter and cheese and have a considerable surplus for export to the West Indies. I was gratified to find, when I visited Bermuda and Jamaica a year or two ago, that the 'Bluenose' and the 'Evangeline' brands of butter and cheese were the most popular of any sold in those islands.

Co-operative or factory dairying was begun in Prince Edward Island in 1892 under the guidance of my predecessor in office, Dr. James W. Robertson. In a few years there were some 40 factories in operation and Prince Edward Island became recognized as a successful dairying province. It has been generally acknowledged that the prosperity of the island has been wonderfully quickened by this adoption of systematic dairy practices.

Following the trend of events rather than a geographical sequence, let us now turn our attention to the West for a few moments. In Manitoba, organized dairying began to make headway about 1894, and there are now a

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fair number of cheese factories and creameries in that province. In what was then the territories of Assiniboia and Saskatchewan, there were at one time 14 creameries in active operation, but the reign of King Wheat has proved inimical to the growth of the dairy industry and it has not been developed extensively in what is now the province of Saskatchewan.

Proceeding westward into Alberta, we find more favourable conditions, especially in that section of the province lying between Calgary and Edmonton, where the progress of the dairy industry has kept pace with the settlement of the country. Beginning in 1896, the increase has been steady and substantial, with the result that to-day there are 45 creameries and 8 cheese factories in the sunny province of Alberta. There is every indication that Northern Alberta will become one of the best dairy sections of Canada.

These two western provinces have been the scene of a unique and rather abrupt departure from the line which has generally been followed by governments in assisting agricultural effort. A few creameries had been started in the early nineties as private or co-operative ventures, but at the end of two or three years, they were, for various reasons, and without exception, acknowledged to be failures. The new settlers, who were depending almost wholly on dairying as a means of livelihood, were in a serious position, because, while it was possible for them to make butter on their farms, their facilities were very poor, and there was no way by which the individual farmer could find a profitable market for his butter at that time.

The Dominion Government came to the rescue, and the Dairy Commissioner was authorized by the Honourable the Minister of Agriculture to take over the management of the existing creameries, to advance sufficient money to pay off their pressing debts, and to make loans for the equipment of new creameries that would come under the same management. Confidence was at once restored and under expert supervision the business grew and prospered so that the Department of Agriculture was able, at the end of 1905, to give up the active control of a large number of creameries which had been assisted to a position of independence and stability. New markets had been found for the butter in the Orient and in the Yukon, and a reputation had been established that is of great value to the industry in that part of the country to-day. The money which was advanced to the creamery associations has all been repaid except a few trifling amounts.

The new provincial governments are following the policy adopted by the Federal authorities, and with a modified plan, continue to foster the industry. Knowing the circumstances, as I do, I have no hesitation in asserting that this action on the part of the government, call it paternalism if you like, saved what was then known as 'the Territories' from a most serious setback, and carried the early settlers over the most critical and trying period of their experience.

Crossing the Great Divide into British Columbia, we find a successful creamery business established at different points in the fertile Okanagan Valley, along the Lower Fraser river and on Vancouver island.

Thus we see that the dairy industry is well established in every province of the Dominion from the Atlantic to the Pacific. The total number of cheese factories and creameries in Canada at present is 4,355. Of this number, 1,284 are in the province of Ontario, and 2,806 are in Quebec, leaving 265 fairly evenly distributed among the other seven provinces. The factories in Ontario average much larger than those in the other provinces.

THE EXPORTS OF CHEESE AND BUTTER.

The first cheese was exported from Canada to Great Britain in 1864 or 1865. (See page 24.) The shipments grew year by year and reached the

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maximum in 1903, when the total value of the butter and cheese exported amounted to the sum of \$31,667,561.

The slight falling off in the quantity exported during the last year or two has been attributed to a decline of the industry, but the true reasons for it are much more satisfactory and are really a cause for congratulation. The large growth in our population and the increased purchasing power of the people generally, easily account for the decrease in the exports.

STILL ROOM FOR EXPANSION.

There is no reason why the dairy industry should not be largely extended in every province of the Dominion. I have visited every important dairy country in the world, except Siberia, and am bound to say none of them is better fitted by nature for successful dairying than Canada is. With a climate which produces healthy, vigorous animals, notably free from epizootic diseases, with a fertile soil for the growing of fodder crops and pasture, with abundance of pure water, and a plentiful supply of ice for all purposes of the dairy, we have almost ideal conditions, and advantages which should be of great assistance in holding a fair share of the world's trade in dairy products.

Great Britain is our chief market for butter and cheese, although we send comparatively small quantities to Newfoundland, Bermuda, the West Indies, British Guiana, Mexico and South Africa. We also sell some butter in the Orient and of late years a small quantity has gone to Germany.

The quantity of butter and cheese annually imported into Great Britain is enormous. The value of the butter alone amounts to over \$100,000,000, of which the little kingdom of Denmark supplies nearly one-half. Siberia comes next and is credited with over \$15,000,000 worth, closely followed by Australia. Next in the order of their importance are France, New Zealand, Sweden, the Netherlands, Canada, the United States and Argentina. Small and irregular quantities are received from some other countries. It will probably surprise many of you to hear that the dairymen of Iceland send occasional shipments of creamery butter to Scotland.

The value of the cheese annually imported into Great Britain is a little over \$33,000,000, of which Canada has the distinction of furnishing 72 per cent of the whole, or 84 per cent of the kind which we make. The other countries from which supplies of cheese are obtained are New Zealand, the Netherlands, United States, France, Switzerland, Italy and Australia. These facts are important, especially in regard to butter, because they show us what a great field there is for a further extension of our butter trade. Canadian butter stands high in the British market, not only for its superior quality, but because our laws relating to its manufacture and sale are the most stringent of any country in the world, and are a standing guarantee of its absolute purity. I need hardly say that Canadian cheese easily ranks first in quality among the imports into Great Britain of the class to which it belongs.

FOOD VALUE OF MILK AND CHEESE.

The comparative food values of milk and cheese are becoming better known, and as this appreciation grows, as it should, these products will enter more largely into our daily dietary than they do at present. A quart of good milk is said to be equal in food value to a pound of meat, and one pound of well ripened cheese contains as much nourishment as two and a half pounds of the best beefsteak; therefore, milk at 12 cents a quart and cheese at 20

cents a pound are among the cheapest of foods, compared with the present prices of other things.

GOVERNMENT AID.

The governments of Canada, both federal and provincial, have been liberal in their policies concerning the dairy industry. It has been generally agreed that the provincial authorities should undertake all work which is educational in character, while the Dominion government deals with questions pertaining to markets, transportation and cold storage, or what may be termed the commercial side of the industry. The Dominion government also assumes the responsibility for the enactment and the administration of the laws relating to the manufacture, sale and exportation of dairy products.

All the provincial departments of agriculture, except Nova Scotia, have regularly organized dairy divisions. Dairy schools are maintained in Ontario, Quebec, New Brunswick and Manitoba. Experts are employed who visit the cheese factories and creameries during the working season, for the purpose of giving instruction to the cheese or butter makers and to advise with those in charge of factories on questions of general management. Canada was the first country in the world to adopt this system of factory instruction, and there are now nearly 100 of these experts employed by the different provincial governments. Much of our success in cheesemaking can be attributed to this system of factory instruction.

The Dominion officials endeavour to keep in touch with the tendencies and requirements of the markets to which our butter and cheese are shipped, and to disseminate among the cheese and butter makers such information as may be acquired with that end in view.

A large staff of men are employed under the Dairy and Cold Storage Commissioner, who watch and report on the handling of butter and cheese from the time it leaves the factory in Canada until it reaches the consumer in Great Britain. The information thus collected is passed on to those who may be interested, or who are responsible for the defects which have been noted, and as a result there is constant improvement being made, not only in the quality of the butter and cheese and in the appearance and style of the packages, but also in the services provided by the transportation companies. The cold storage services, both on land and sea, which were inaugurated through the initiative of the Department of Agriculture, at the head of which is the Hon. Sydney Fisher, who is our chairman this evening, have been of incalculable benefit to the dairying industries.

SOME STATISTICS OF DAIRYING.

TABLE III.—TOTAL NUMBER OF CHEESE FACTORIES, CREAMERIES AND COMBINED FACTORIES IN CANADA IN 1907, BY PROVINCES.

Provinces.	Cheese Factories.	Combined Cheese and Butter Factories.	Creameries.	Skimming Stations.	Total.
Ontario.....	1,096	86	102	.....	1,284
Quebec.....	1,392	736	627	51	2,806
Prince Edward Island.....	23	16	8	.....	47
Nova Scotia.....	7	.....	10	.....	17
New Brunswick.....	33	.....	35	.....	68
Manitoba.....	36	.....	21	.....	57
Saskatchewan.....	1	6	7
Alberta.....	8	45	53
British Columbia.....	16	16
	2,596	838	870	51	4,355

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TABLE IV.—TOTAL EXPORTS OF CHEESE AND BUTTER IN FISCAL YEARS 1880 TO 1903 INCLUSIVE.

BUTTER.			CHEESE.		
Year.	Quantity.	Value.	Year.	Quantity.	Value.
<i>Years ending June 30.</i>	Lbs.	\$	<i>Years ending June 30.</i>	Lbs.	\$
1880.....	18,535,362	3,058,069	1880.....	40,368,678	3,893,366
1890.....	1,951,585	340,131	1890.....	94,260,187	9,372,212
1891.....	3,768,101	602,175	1891.....	106,202,140	9,508,800
1892.....	5,736,696	1,056,058	1892.....	118,270,052	11,652,412
1893.....	7,036,013	1,296,814	1893.....	133,946,365	13,407,470
1894.....	5,534,621	1,095,588	1894.....	154,977,480	15,488,191
1895.....	3,650,258	697,476	1895.....	146,004,650	14,253,002
1896.....	5,889,241	1,052,089	1896.....	164,689,123	13,956,571
1897.....	11,453,351	2,089,173	1897.....	164,220,699	14,676,239
1898.....	11,253,787	2,046,686	1898.....	196,703,323	17,572,763
1899.....	20,139,195	3,700,873	1899.....	189,827,839	16,776,765
1900.....	25,259,737	5,122,156	1900.....	185,984,430	19,856,324
1901.....	16,335,528	3,295,663	1901.....	195,926,397	20,696,951
1902.....	27,855,978	5,660,541	1902.....	200,946,401	19,686,281
1903.....	34,128,944	6,954,618	1903.....	229,099,925	24,712,943
1904.....	24,568,001	4,724,155	1904.....	233,980,716	24,184,566
1905.....	31,764,303	5,930,379	1905.....	215,733,259	20,300,500
1906.....	34,031,525	7,075,539	1906.....	215,834,543	24,433,169
<i>Years ending March 31.</i>			<i>Years ending March 31.</i>		
1907 (9 months).....	18,078,508	4,011,609	1907 (9 months).....	178,141,567	22,006,584
1908.....	4,786,954	1,068,703	1908.....	189,710,463	22,887,237

TABLE V.—DETAILED STATEMENT OF EXPORTS OF CHEESE IN FISCAL YEARS 1902 TO 1908 INCLUSIVE. (Years ending June 30, 1902 to 1906, and years ending March 31, 1907 and 1908.

To	1902.	1903.	1904.	1905.	1906.	1907. (9 months.)	1908.
	\$	\$	\$	\$	\$	\$	\$
Great Britain.....	19,620,239	24,620,004	24,099,004	20,174,211	24,300,908	21,909,879	22,763,736
Australia.....	6,862	6,913	6,247	5,411	5,350	245	525
British Africa.....	868	2,514	7,559	10,612	16,623	18,261	16,362
B. W. Indies.....	18,542	44,674	34,253	36,176	25,509	13,666	27,533
B. E. Indies.....	60	40	315	62	20		
British Guiana.....	1,833	2,165	1,193	2,571	3,860	3,143	6,228
Other British Possessions...	746	553	216				9
Hong Kong.....		161	1,253	1,079	1,029		851
New Zealand.....	216	983	1,039	1,642	1,795	1,690	1,362
Newfoundland.....	20,100	21,334	21,754	35,171	30,992	37,748	35,792
Belgium.....			10	22	287		2,080
Argentina.....		14					
Cuba.....	350	331	211	102	811		57
China.....	1,409	1,734	1,899	2,013	2,195	2,206	1,572
Danish West Indies.....	332	2,037	1,936	2,046	2,056	1,568	1,985
France.....			44	700	7,203		10
Japan.....	821	1,076	1,609	759	775	1,071	1,444
Philippine Islands.....		289	100				
St. Pierre.....	158	120	356	341	875	318	190
United States.....	12,038	7,779	5,386	14,182	16,082	6,900	17,732
Dutch West Indies.....	538						
Norway and Sweden.....				101	994		
Germany.....	1,179	170		364		54	3
Bermuda.....				12,505	14,033	9,080	9,245
Dutch Guiana.....		15	23	18	13	9	
Egypt.....		30					
Mexico.....			159	329	1,594	630	168
French West Indies.....		7					
Central America.....				80			347
Holland.....					97	116	
U. S. of Columbia.....					68		
Other countries.....							6
Totals.....	19,686,291	24,712,943	24,184,566	20,300,500	24,433,169	22,006,584	22,887,237

TABLE VI.—DETAILED STATEMENT OF EXPORTS OF BUTTER IN FISCAL YEARS 1902 TO 1908 INCLUSIVE. (Years ending June 30, 1902 to 1906; years ending March 31, 1907 and 1908.)

To	1902.	1903.	1904.	1905.	1906.	1907. (9 months).	1908.
	\$	\$	\$	\$	\$	\$	\$
Great Britain.....	5,459,300	6,554,014	4,400,774	5,568,999	6,802,003	3,805,925	823,761
British West Indies.....	71,816	112,968	127,790	80,323	87,085	59,313	85,371
British Guiana.....	6,796	7,565	6,412	8,929	11,654	8,113	12,861
Other British Possessions ..	284	72					5
Hong Kong.....							
Newfoundland.....	47,066	69,017	88,422	82,387	48,233	56,516	34,931
China.....	78	141	1,763	562	761	5,041	1,319
Cuba.....	243	202	796	658	285	1,034	720
Danish West Indies.....	1,581	6,077	5,858	4,473	4,560	3,664	4,939
French West Indies.....		1,020					
Germany.....	101	13	25,644				
Hawaii.....		115					
Italy.....		38					
Japan.....	1,013	1,816	6,027	6,496	9,373	9,062	4,258
St. Pierre.....	27,102	28,655	26,598	21,827	17,668	17,615	18,749
United States.....	41,149	10,225	6,497	70,580	33,965	3,539	38,899
British Africa.....	12	133,958	16,417	4,914	2,056	265	
Mexico.....		4,685			1,268	484	265
Brazil.....	1,608	9,084					
Dutch West Indies.....	2,040						
U. S. Columbia.....	92	1,175	2,272	200	1,747	2,145	
Australia.....	260	6,187					
Bermuda.....				50,482	47,045	33,900	33,177
France.....			14	14,440	4,155		
San Domingo.....		1,351					
Holland.....			8,175	13,680			
Venezuela.....		6,240					
Belgium.....			10	116			
Central America.....			686	1,062	3,431	4,932	9,418
Corea.....				15			
Dutch Guiana.....				186	30	40	
Turkey.....				50		21	
Porto Rico.....					170		
Totals.....	5,660,541	6,954,618	4,724,155	5,930,379	7,075,539	4,011,609	1,068,703

TABLE VII.—QUANTITIES OF CHEESE IMPORTED INTO THE UNITED KINGDOM, BY COUNTRIES, FOR YEARS ENDING DECEMBER 31.

From	1901.	1902.	1903.	1904.	1905.	1906.	1907.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
Holland.....	315,925	284,020	302,503	233,601	214,033	229,341	241,551
Belgium.....	74,071	70,372	87,998	63,694	64,389	76,021	72,133
France.....	26,833	36,801	36,004	44,268	48,884	43,244	47,036
Italy.....	714	732	726	642	727	544	645
United States.....	540,102	390,479	360,916	224,830	175,256	233,445	114,300
Other foreign countries.....	2,144	2,323	1,720	1,014	2,000	4,146	1,901
Australia.....	149						
New Zealand.....	79,094	51,875	56,339	84,947	78,626	126,216	192,301
Canada.....	1,547,739	1,709,565	1,848,142	1,900,556	1,858,767	1,925,835	1,698,817
Other British Possessions...	68	45	10	745		2	3,519
Totals	2,586,837	2,546,212	2,694,358	2,554,297	2,442,682	2,638,794	2,372,233

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TABLE VIII.—QUANTITIES OF BUTTER IMPORTED INTO THE UNITED KINGDOM, BY COUNTRIES FOR YEARS ENDING DECEMBER 31.

From	1901.	1902.	1903.	1904.	1905.	1906.	1907.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
Russia.....	378,452	490,091	484,328	404,717	461,140	606,549	657,649
Sweden.....	180,212	191,591	212,232	206,791	188,209	182,803	226,740
Norway.....	26,341	26,266	23,197	28,532	31,773	29,302	23,465
Denmark.....	1,597,186	1,703,032	1,771,654	1,708,619	1,630,363	1,675,761	1,818,811
Iceland and Greenland....	264	589	1,107	2,632	3,022	2,319	2,804
Germany.....	26,983	26,375	12,507	4,080	5,372	10,701	7,297
Holland.....	298,912	393,261	343,761	252,262	209,897	195,366	168,496
Belgium.....	77,526	80,636	76,510	65,191	53,252	42,239	22,120
France.....	311,601	414,240	454,088	371,061	348,442	319,401	281,306
United States.....	150,126	54,458	42,405	68,754	84,874	157,312	1,063
Argentine Republic.....	22,787	69,336	80,491	82,568	77,013	48,737	51,122
Other Foreign Countries....	515	23	586	.....	300	188	242
British East Indies.....	882	863	1,329	1,417	1,425	1,848	1,439
Australia.....	248,163	80,397	121,165	480,778	459,333	561,114	598,986
New Zealand.....	167,343	157,993	249,879	294,982	300,418	311,672	313,863
Canada.....	215,588	235,765	185,437	268,607	292,117	190,968	34,753
Other British Possessions...	4	17	18	14	916	978	.....
Totals.....	3,702,890	3,974,933	4,060,694	4,241,005	4,147,866	4,337,258	4,210,156

DAIRY LEGISLATION.

The dishonest and fraudulent practice of 'stuffing' cheese, or in other words, disposing of inferior or worthless curd or cheese when the curd is being put to press, is apparently somewhat on the increase, as more cases have been reported during the last few years than previously. This is believed to be the result of undue publicity given to a case two or three years ago. It is said that any person guilty of this act could be prosecuted for fraud, but the difficulties in the way of having prosecutions made on that basis would seem to make special legislation desirable to deal with this question, in order to protect the reputation of the Canadian cheese trade from unscrupulous and dishonest persons.

The silly and reprehensible practice of putting bottles or boxes containing notes, &c., in the centre of cheese, must also be stopped. Very serious complaints have been made by receivers in Great Britain who find these bottles broken and liable to cause serious injury to persons eating the cheese. It is a disgusting thing to find any foreign substance in the centre of the cheese in any case. It is, therefore, proposed to amend the Inspection and Sale Act (Revised Statutes of Canada, 1906) by the addition of the following section:—

238a. No person shall

(a) incorporate in a new cheese, during the process of its manufacture, any inferior curd or cheese; or

(b) knowingly sell, expose, or have in his possession for sale without giving due notice thereof, any cheese in which has been incorporated during the process of its manufacture any inferior curd or cheese; or

(c) place in a cheese during the process of its manufacture, or at any time thereafter any foreign substance of any kind.

Section 279 of the said Act is amended as follows:—

(g) 'Foreign substance' means any substance not necessary to the manufacture of the cheese into which it is introduced.

The penalty for violations of the foregoing sections are not more than five hundred dollars, not less than twenty-five dollars for each offence.*

* These proposed amendments became law on July 20, 1908.

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THE FIRST CHEESE EXPORTED.

Mr. A. A. Ayer, the well known cheese exporter of Montreal, writing in reference to the statement published over the signature of Adam Brown, Esq., of Hamilton, Ontario, at page 9 of our report for 1907, rather takes exception to Mr. Brown's claim to have been the first exporter of Canadian cheese to England in 1866. Mr. Ayer says: 'The late Mr. Heath, of the firm of Heath & Finnimore, London, Ontario, was living in Waterloo, Quebec, for some time before and after 1864-65. He bought and shipped to England, the first product of the Dunham factory, including the make up to August 1, 1865. The Dunham factory was started in 1864.] I am positive about the shipments to England from May 1, 1865, but not so positive about any shipments having been made in 1864.

'I personally bought about 1,100 cheese from the Dunham factory, being the make of August, September and October, 1865. Only a small portion of this, however, was shipped to England, the balance being required for the local trade in Montreal and Quebec. From that date forward there was a gradual increase in the shipments of Canadian cheese to England, and the writer has been actively connected with the trade from the time that the first factory cheese were made in Canada.'

We are pleased to give space to Mr. Ayer's remarks, and to record these historical facts concerning the beginning of the Canadian export trade in dairy products before they are forgotten.

THE COW TESTING ASSOCIATIONS.

INTRODUCTION.

The principal active dairy work carried on during the year by this branch, was that which has for its object the improvement of dairy herds, and is a continuation of the work of the cow testing associations, which was dealt with in the report for the year ending March 31, 1907. The records of each month's tests have been widely published in press bulletins issued regularly, and it is not intended in this report to give the records with as much detail as was done last year.

It is a very gratifying result of this campaign to find that many more dairymen have become interested in the matter of keeping records of individual cows, and have taken it up on their own account. We continue to supply blank forms for recording the weight of milk to all who apply for them.

We have endeavoured from the first to secure the co-operation of the owners and managers of the cheese factories and creameries, and at the time of writing the indications are that nearly all the testing will in future be done by some person connected with a factory. An announcement has been made to the effect that competent persons will be paid for this work at the rate of five cents per test, the department to furnish the blank forms and the chemicals used in making the tests.

The owners of the herds must supply their own outfits and deliver the samples at the appointed time and place of testing. The record of the weight of milk and the percentage of fat is sent to this office, where all calculations are made; a copy of the monthly report is returned to the owner of the herd along with the record of all the other herds, designated by number only, belonging to the same association. At the end of the year a complete report is sent to each member, giving him full particulars of the record of the individual cows in his herd. Mr. C. F. Whitley of the dairy staff, who has become well known to the dairymen of Canada, through his connection with this work, and to whom I am indebted for careful and intelligent supervision of it, has worked out the instructive comparisons and compiled the interesting tables which will be found in the following pages.

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GENERAL.

In 1907 there were 56 cow testing associations in operation in the Dominion, comprising 26 in Quebec, 24 in Ontario, 1 in Prince Edward Island, 2 in Nova Scotia, and 3 in British Columbia. This was a marked increase over the work of 1906, when there were only 16 associations. The members increased from 297 to 876, and the number of cows entered to be recorded, from 3,750 to 9,160. Better than the mere growth numerically was the enhanced interest taken by the members in the work. The weighing of the milk was more regular, the samples seem to have been more carefully taken and were sent in more promptly for testing; while the work, generally speaking, was continued longer, so that more records for longer periods are available than last year. Further than this, there was a greater disposition evinced on the part of the members to meet the officials from the department who were doing the testing, so as to ask questions on all manner of subjects pertaining to dairying. This is an indication of what could easily be accomplished with most beneficial results, namely, the making of the cheese factory or creamery a real centre of dairy education. One of two associations also, at the suggestion of the department, arranged for an occasional meeting of the members, just among themselves, to discuss the records and take steps for the improvement of their herds. This feature is one of great promise. One great advantage of records of dairy cows is the opportunity afforded for comparisons. Enquiry naturally is made regarding 3 distinct points of difference:—(1) between yields in various districts or counties, (2) between yields of herds in the same associations, but most important of all, (3) between individual cows in the same herd under the same management. This brings into most prominent thought the ultimate aim of the work undertaken by members of all cow testing associations, namely, a real study of each individual cow in the herd, with the object of developing strains of animals producing abundant quantities of milk economically.

Taking the districts question first, one or two noteworthy contrasts may be mentioned. Others will be noticed in the tabulated statements which follow.

In July 133 cows at North Oxford, Ont., gave 123,800 lb. milk, 4,128 lb. fat; but 143 cows at Woodburn, Ont., gave only 107,010 lb. milk, 3,444.1 lb. fat. That is, 10 more cows at Woodburn gave 16,790 lb. milk, 684.3 lb. fat less.

In August 142 cows at Ste. Emelie, Que., gave 70,245 lb. milk, 2,962.7 lb. fat; but 136 cows at St. Prosper, Que., gave 104,490 lb. milk, 4,263.5 lb. fat. That is 6 more cows at Ste. Emelie gave 30,245 lb. milk, 1,300.8 lb. fat less.

The September yields in various associations afford some interesting and striking comparisons: Cowansville, Que., 111 cows, 48,795 lb. milk, 2,139.1 lb. fat. St. Marc, Que., 114 cows, 60,045 lb. milk, 2,675.0 lb. fat. St. Prosper, Que., 113 cows, 78,455 lb. milk, 3,304.8 lb. fat. From practically the same number of cows the owners at St. Prosper obtained 27,660 lb. milk and 1,165.7 lb. fat more than did the owners at Cowansville.

In October 54 cows in the Star, Ont., association gave 19,330 lb. milk, 751.9 lb. fat. During the same time 106 cows in the East and West Oxford association gave 65,830 lb. milk, 2,347 lb. fat; this is a better yield by 70 per cent.

The total production of 54 cows in one association in Victoria county during October was 19,330 lb. milk, containing 751.9 lb. butter fat. During the same period 106 cows in Oxford county gave 65,830 lb. milk, 2,347 lb. fat, or again a better yield by 70 per cent. Many men in the former association are looking for the dual purpose cow; probably all members of the latter association aim at special purpose cows. In the former district some farmers leave the whole care of the cows to the women of the household, purely as a 'side line,' and if they can make anything out of the cows besides keeping the house in milk, cream and butter, they are satisfied. Some keep a scrub bull running with the herd, and have no idea when the cows should freshen. The latter is a real, whole-hearted, progressive, money making dairy district. Taking other records from the same two counties, it is found that in the six months, May to

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October, 1907, the total production per cow stood at 4,793 lb. milk and 165 lb. fat in the one case, and 2,724 lb. milk, 99 lb. fat in the other. This is a difference of 76 per cent. One moment's thought will indicate the tremendous possibilities for Victoria county if its 19,000 cows were 76 per cent higher in their returns than they are at present. Why should they not be?

Another contrast in 30-day yields is found in two Quebec associations, where 65 cows at Cowansville in November gave a total of 1,321.4 lb. fat, but 60 cows at St. Jerome gave only 566.3, considerably less than half.

Similar differences might be instanced for every month in many districts. Enough have been quoted to weight the argument for better cows. The difference in herd averages, though comparatively small, aggregates a tremendous total. The extra profits could easily be made.

There is possibly a difference in the adaptability of the districts to dairying, but there is certainly a more pronounced difference between the individuality of the owners of the herds. A real affection for the dairy cow means better care of her, and consequently better returns financially. Care means cash.

The differences between herds in the same district and the same association illustrate, possibly better than the above, the aptness and efficiency of one man's methods over another's in the application of intelligent, up-to-date business methods to the science and practice of dairying. In this industry to-day there is no room for shiftless, haphazard, hit or miss methods; the dairy herd has to be run as a commercial undertaking. Over and over again can be found instances of ten cows producing just as much milk as twenty. Such contrasts are in herds in associations in Ontario, Quebec and British Columbia, indicating that there is room for little short of a perfect revolution in dairy management in many localities. Let the records speak to the question for a moment. Nine cows in one herd at St. Marc, Que., gave a total yield of 265 lb. fat, while in another herd in the same association 18 cows gave only 260 lb. during September. All of them calved in April. Again, 10 cows in one herd gave 9,550 lb. milk, while 16 in another gave only 7,000 lb.

Another instance, at Cowichan, B.C., in July, 209 cows averaged 631 lb. milk, 3.7 test, 24.0 lb. fat. But one herd averaged 1,067 lb. milk, 4.3 test, 46.4 lb. fat; while another averaged only 417 lb. milk, 3.9 test, 16.5 lb. fat, or only a fraction over one-third as much butter fat.

One lot of cows in the hands of a careful dairyman, during 5 months, averaged 4,194 lb. milk each, but another lot yielded only 2,727 lb. each. If the earning capacity of the latter had been equal to that of the former, they would have given 16,130 lb. of milk *more* than they did.

Sprinkled all through the detailed records of each association as given below are to be found scores of similar examples of the striking differences in the average production of herds in the same district, whether for short or long periods.

The third point of contrast is that between cows in the same herd. This individuality of animals is so strongly marked that only by careful observation on the part of the owner can be determined the most profitable cows for selection as the foundation stock of the herd. The very fact that in any breed there are so many departures from the characteristics and particular type that may be expected—the difference in the animals' ability to use feed, their variation in yield of milk and fat under similar conditions, their persistency in milking or their tendency to dry off quickly—emphasizes the importance of continuous watchfulness and intelligent action, wherever a herd is kept. Such action must follow a study of each cow's record.

To illustrate some of these points, one does not usually expect to find a high fat content in Holstein milk. Here and there have been noticed some individuals of this breed that averaged over 4.0 per cent fat for the season. Are there many more to be discovered? Why should we rest content with so many cows testing only 2.5, 2.2 and even 2.0 per cent? Is it equitable to other patrons at the cheese factory to let

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the burden of making up the milk to a fair standard of quality as regards fat rest on their better cows?

There is certainly virtue in inherited tendencies; the transmission of dairy quality is possible. Judicious selection aims at this. Heavy milking ancestry is a very live factor in the capabilities of animals of the present generation. A twelve-year-old grade that calved in October, 1906, gave in the 8 months, January to October, 1907, over 8,360 lb. milk testing 3.8 every month. She has had no special treatment, but comes of good milking stock. Selection pays.

It has been stated that if the shrinkage per month in milk yield for the first six months is not over 10 per cent of the previous month, it is not abnormal. Very few indeed, of the animals recorded here show as little as that. A few run from 13 to 16 per cent, but a very great many have a shrinkage of 20, 30 and even 35 per cent, even in the first four months of milking. There is certainly room for improvement at this point. In one herd there were noticed cows calving in spring that gave only 500 lb. milk in September, but others calving at the same time were still giving in September 900, 1,000 and 1,100 lb. These are the animals to select and breed from.

The tendency in far too many cases seems to be to have the cows milk just for the cheese making season only. Ten months is not too long.

The evident preference of the cow for methodical habits has been vigorously commented on by some of our members. Her objection to a change of milkers is very apparent. The establishment of a perfect sympathy and mutual understanding between the cow and the milker, and not only that, but regularity as to the hour of milking is insisted on most strongly by our best men, who find that careful attention to these details pays, and pays well.

The herds with the poorest records were almost always found to be those with the greatest mixture of grades and the largest number of cross-breds.

In some localities, those not quite alive to the enormous possibilities of high class dairying, farmers were to be found taking this attitude, 'I don't care whether the cow pays with milk or not, as long as she raises a good steer calf'; and again, 'Where can I replace a cow if she does not pay?' The obvious rejoinder was that it is a man's duty to see that each cow in the herd does pay; any dairy farmer with a good head on his shoulders ought so to direct and control the forces surrounding him that his whole herd is made profitable. The 'grading up' of a herd by selection of the best cows at present on the farm, by the use of pure bred sires of good dairy descent, has frequently been advocated, but there still seems need of its constant reiteration. Hundreds of dairymen in the Dominion have turned run down farms and poor herds into highly productive lands and excellent herds by the use of brains.

A large number of last year's members discontinued because they are not farming any longer. This also explains the brevity of many tests in some localities.

One argument in favour of more frequent weighings than the six times per month as at present, is the statement of several members that on the three days appointed for weighing, their cows invariably seemed to fall off in milk for some reason or other; hence some cows, they think, gave more milk than would appear in the records. The advisability of daily weighing has always been recommended and strongly advised by representatives of this branch at meetings of members.

It seems necessary to repeat that one main object of this work is to increase the milk production through a systematic study of each individual cow in the herd. Even after all that has been said and written on this subject it is found that many men still rest content to-day with the presumption that the total herd production of milk is 'fairly good,' and the average test is 'pretty fair.' This is altogether too vague. Until there is determination to check up the performance of each animal definitely, some of these 'loafers' that give an unprofitable weight of milk and a poor test are almost certain to be retained, to the detriment of the owner and the herd standard.

Taking eight months, April to November, 46 per cent of all the cows recorded

were 100 lb. milk below the average every month. The average in May for all the cows tested in Ontario associations was 764 lb. milk, and 46 cows out of every 100 gave only 653 lb. Similarly in August the average yield was 638 lb., and 46 per cent gave only 529 lb.

Taking the total number of milch cows in Ontario as 1,100,000, and then assuming that 46 per cent of them could easily give 100 lb. of milk more than they do at present, with milk at 90 cents per 100 lb. the dairymen of this province could easily have an extra income of three and a half million dollars. Note that this is simply by improving those below the average, which should not be difficult, and does not consider the immense possibilities involved in further improving the average and the good cows.

INTANCES OF THE VALUE OF TESTING.

One member relates the incident of a neighbour purchasing a cow for \$100, but being dissatisfied with her, he resold her, gaining \$5 on his bargain. She fell into the hands of a man using the scales and Babcock test, who as-soon as he could show a few months' records disposed of her for \$500.

Another cow, 8 years old, was bought for \$32 from a man who evidently did not realize her value; for her milk brought in \$140 from the factory in one year.

A buyer who picked up four cows out of one stable remarked to the owner he could not give much for one particular animal. Nevertheless that same cow as a 3-year-old gave 10,326 lb. milk, testing 3·7. Before recording her production the cow was valued at \$35, but \$100 is refused now.

One member who had set his standard for each cow at 7,000 lb. milk per year, has now decided to make it 10,000 lb. per cow, and is quickly working up to that.

Another member offered a heifer for sale at \$25 when she first came in; he says now that he would not sell her at all, as she is proving herself by the test to be one of his best cows.

As one result of this record work some members have already set about improving the herds of the district by purchasing animals whose value is supported by records of milk and butter fat production.

Many members owning cows that until tested had been booked for the butcher, admitted that the weighing and testing had proved such animals to be the best in the herd; this testing has thus been of inestimable value in opening men's eyes to facts.

Following a good example set at one association where the proprietor of the creamery offered cash prizes at the fall fair for the cows with the best association records, the suggestion is made that directors of other fairs might do likewise.

COW TESTING ASSOCIATIONS.—AVERAGE MONTHLY YIELDS, 1907.

	Total Number of Cows.	AVERAGE YIELD.		
		Lbs. Milk.	Test.	Lbs. Fat.
January—				
Ontario.....	80	479	3·6	17·6
Quebec.....	239	310	4·6	14·3
General average.....	319	353	4·3	15·1
February—				
Ontario.....	41	579	3·4	20·0
Quebec.....	163	415	4·3	18·0
General average.....	204	448	4·1	18·4
March—				
Ontario.....	123	741	3·5	26·3
Quebec.....	194	480	4·1	20·0
General average.....	317	582	3·8	22·4

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	Total Number of Cows.	AVERAGE YIELD.		
		Lbs. Milk.	Test.	Lbs. Fat.
April—				
Ontario.....	1,076	671	3.3	22.4
Quebec.....	762	491	3.7	18.2
General average.....	1,838	597	3.4	20.6
May—				
Ontario.....	1,663	764	3.3	25.4
Quebec.....	1,963	574	3.7	21.2
Prince Edward Island.....	34	587	3.4	20.1
General average.....	3,660	661	3.5	23.1
June—				
Ontario.....	2,886	851	3.3	28.5
British Columbia.....	865	745	3.7	27.7
Quebec.....	3,194	693	3.8	26.4
Nova Scotia.....	99	526	4.4	23.6
Prince Edward Island.....	97	630	3.3	21.3
General average.....	7,141	760	3.5	27.3
July—				
Ontario.....	2,859	762	3.3	25.5
Quebec.....	2,935	656	3.8	25.2
British Columbia.....	815	636	3.7	24.0
Prince Edward Island.....	124	669	3.4	22.9
Nova Scotia.....	82	499	4.3	21.6
General average.....	6,815	696	3.6	25.1
August—				
British Columbia.....	765	653	3.9	25.0
Quebec.....	2,847	563	3.9	22.4
Ontario.....	2,633	638	3.4	22.0
Prince Edward Island.....	147	570	3.5	20.3
Nova Scotia.....	47	437	4.7	20.3
General average.....	6,439	601	3.8	22.4
September—				
British Columbia.....	422	630	4.0	25.3
Quebec.....	2,346	486	4.2	20.8
Ontario.....	2,543	542	3.7	20.0
Prince Edward Island.....	134	524	3.7	19.5
General average.....	5,445	524	3.9	20.8
October—				
British Columbia.....	626	545	4.4	24.0
Nova Scotia.....	37	450	4.1	18.7
Ontario.....	2,124	471	3.8	18.3
Quebec.....	1,807	388	4.4	17.3
Prince Edward Island.....	123	422	3.8	16.1
General average.....	4,717	448	4.1	18.6
November—				
British Columbia.....	516	486	4.4	21.1
Ontario.....	1,155	423	3.8	16.3
Prince Edward Island.....	95	332	4.1	13.9
Quebec.....	967	298	4.6	13.8
General average.....	2,733	388	4.2	16.3
December—				
British Columbia.....	420	528	4.4	23.4
Ontario.....	540	438	3.7	16.6
Quebec.....	418	281	4.5	12.6
Prince Edward Island.....	78	271	3.9	10.5
General average.....	1,456	410	4.1	17.1

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PERCENTAGE OF FAT.

In 1906 the number of cows tested each month in Ontario and Quebec varied from 36 in January to 2,869 in July, with a total number of tests during the twelve months of 17,135, giving a total yield of 9,420,860 pounds of milk and 363,990·9 pounds of fat, which means an average test of 3·86 per cent of fat.

In 1907 the number of cows tested each month in the Dominion varied from 204 in February to 7,140 in June, with a total number of tests during the twelve months of 41,257, giving a total yield of 24,673,000 pounds of milk and 923,944·9 pounds of fat, which means an average test of 3·74 per cent of fat.

AVERAGE PER CENT OF FAT, 1907.

	Total Number of Cows Tested.	Total Milk.	Total Fat.	Average Test.
Ontario.....	17,723	11,573,913	402,982·1	3·48
Quebec.....	17,835	9,735,103	387,171·4	3·97
Canada.....	41,257	24,673,000	923,944·9	3·74

The following table shows the average percentage of fat in milk from the number of cows indicated, by months, for the calendar year of 1907, in Ontario and Quebec.

AVERAGE PERCENTAGE OF FAT, 1907.

MONTH.	ONTARIO.		QUEBEC.		TOTAL.	
	Number of Cows.	Average Test.	Number of Cows.	Average Test.	Number of Cows.	Average Test.
January.....	80	3·6	239	4·6	319	4·3
February.....	41	3·4	163	4·3	204	4·1
March.....	123	3·5	194	4·1	317	3·8
April.....	1,076	3·3	762	3·7	1,838	3·4
May.....	1,663	3·3	1,963	3·7	3,626	3·6
June.....	2,866	3·3	3,194	3·8	6,060	3·5
July.....	2,859	3·3	2,935	3·8	5,794	3·5
August.....	2,633	3·4	2,847	3·9	5,480	3·7
September.....	2,543	3·7	2,316	4·2	4,859	3·9
October.....	2,124	3·8	1,807	4·4	3,931	4·1
November.....	1,155	3·8	967	4·6	2,122	4·1
December.....	540	3·7	418	4·5	958	4·1

FEED.

So many members have been inquiring about the question of feed, evidently with the thought in mind that feed is expensive, that the experience of one man may well be quoted for general encouragement. He has one pure-bred cow with a certified record of 13,158 lb. milk, and 485 lb. fat in 365 days. His estimate of the cost of feed is \$70. But his actual cash receipts, from milk sent to a cheese factory part of the year and to a condensery for the balance, amounted to \$170. In other words, for every dollar invested in feed, the cow returned two dollars and forty-two cents worth of milk. As a large money-making investment a cow of this individuality is surely an excellent type. Where else could such interest be guaranteed? This farmer is milking over 40 cows, and expects each one to produce over 8,000 pounds of milk. The evident moral is that it pays, and pays abundantly well, to select cows of good individual

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capacity, whether grades or pure-breds, and to feed judiciously. Why should any man rest content with giving thirty dollars worth of feed to a cow that will only return thirty dollars worth of milk?

Through the courtesy of Mr. J. H. Grisdale of the Experimental Farm, Ottawa, a circular issued by him, relative to the growing of soiling crops, was mailed to each member. Our officials who were doing the testing report that by many farmers the suggestions were ignored, much to their regret later in the season. Others, fortunately, were quick to take good advice and were well repaid.

Those who were feeding soiling crops state that even if in some cases there was no substantial increase in the yield, they have succeeded in keeping up the flow in spite of the unfavourable weather (late spring, practically no summer, and rainy fall), and considered that they were well repaid for the extra work. Had it not been for the extra care and extra feed given to the cows in addition to the pasture, they state, the cows would in September and October have given practically nothing.

In the Shearer, Ont., association, one member fed chop all summer, chiefly oats and pease. His 7 cows gave in July, August, September and October 2,943 lb. milk, 101.8 lb. fat each. A neighbour stated that this was the first for many seasons that he gave no extra feed, and said that he was ashamed of his weights. During the same four months his 16 cows gave only 2,230 lb. milk, 78.7 lb. fat. If they had produced as well as the first herd these 16 cows would have given an extra 11,408 lb. milk. At 90 cents per 100 lb., this means \$102.60 lost, in four months.

The members at St. Prosper, Que., who were feeding soiling crops averaged 913 lb. milk and 29.3 lb. fat more per cow in 6 months than the other members who were not feeding soiling crops.

At St. Marc, Que., one herd of 8 cows in August gave an average of 706 lb. milk, 3.8 test, 26.8 lb. fat. In September they averaged 792 lb. milk, 3.7 test, 29.5 lb. fat. While other men were wondering at the shrinkage of their cows, this particular farmer, thanks to his provision of green feed at the suggestion of this department, was rejoicing in an extra 688 lb. milk and 21.6 lb. of fat over his August receipts.

A contrast between two herds in two Quebec associations is given below in tabulated form for the purpose of emphasizing two points: first, the advantage of liberal feeding; second, the advantage of selecting cows according to each cow's ability to produce paying quantities of milk and butter fat.

The owner of herd A feeds liberally, giving grain every day in the year, and providing green soiling crops. Further, he has, through the use of scales and the Babcock test, systematically practiced selection for nine years. Has it paid him?

Though the feed cost \$15 per cow more than it cost per cow in herd B, the profit on more feed with the better cows was over five times as much.

COMPARISON OF TWO GRADE JERSEY HERDS, QUEBEC, 1907.

Herd.	Number of Cows.	Total Yield of Milk.	Fat.	Cost of Feed per Cow.
		Lbs.		\$ cts.
A.....	20	131,900	4.8	50 00
B.....	22	75,427	4.7	35 00

Herd.	Cost of 100 Pounds Milk.	Profit per 100 Pounds Milk.	Profit on the Total Yield.
	\$ cts.	\$ cts.	\$ cts.
A.....	0 75	0 44	592 90
B.....	1 02	0 15	113 14

COMPARISON OF NET PROFIT FROM A GOOD AND AN AVERAGE COW.

Looking into the records of two cows in a Quebec association, it is found that a good cow produced 7,900 lb. skim milk and 350 lb. fat; or a total value of product of \$99.55. Another cow in the same herd gave 3,700 lb. skim milk and 205 lb. fat, or a total value of product of \$56.85. Presuming that feed cost \$30, the net value stands for No. 1 cow at \$69.55, and for No. 2 cow, at \$26.85. But are there not other expenses besides cost of feed? Some provision must be made for such items as interest on the value of the cow, her depreciation, cost of caring for her, interest and taxes on buildings. Her share of cost of maintenance of a first-class dairy sire may be offset by the value of the calf, and manure should be credited. In some dairy sections in the state of Ohio these expenses have been averaged at \$21 per cow. Applying these figures to the two animals here considered, the deduction from the total value of product will now be \$51. Hence it is seen that No. 1 cow gave \$48.55 net profit, and No. 2 cow gave a net profit of only \$5.85. Therefore, the one cow gave 8¹/₅ times as much net profit as the other. In other words, to obtain \$1,000 net profit, one would need to keep only 20 cows like No. 1, but actually 171 cows like No. 2. Which is the preferable kind? Yet in such extraordinary proportions are cows being kept to-day. Should not such contrasts sound the bugle call to action on every dairy farm?

ASSOCIATIONS IN ONTARIO, PRINCE EDWARD ISLAND AND BRITISH COLUMBIA.

AVERAGE YIELD OF 438 COWS TESTED FOR SIX MONTHS, 1907, IN ONTARIO.

Name of Association.	Number of Cows.	Average Milk.	Average Test.	Average Fat.
		Lbs.		Lbs.
Kinmount.....	9	2,539	3.6	89.4
Lorneville.....	16	2,916	3.5	102.6
Oak Leaf.....	6	3,006	3.5	107.5
Pine Grove.....	31	3,120	3.4	107.4
Spring Creek.....	20	3,369	3.5	119.7
Milton.....	17	3,184	3.8	120.0
Warsaw.....	70	3,521	3.4	121.1
Beaverton.....	24	3,364	3.6	122.6
Sheffield.....	30	3,350	3.7	124.4
North Oxford.....	16	3,717	3.5	129.1
Shearer.....	20	3,990	3.3	131.0
Central Smith.....	11	4,056	3.3	132.5
Woodburn.....	34	3,914	3.4	133.2
Keene.....	21	4,052	3.3	137.2
Brockville.....	21	4,184	3.3	140.0
East and West Oxford.....	26	4,322	3.5	151.3
Culloden.....	38	4,323	3.6	154.3
Rockford.....	28	5,206	3.3	171.4

Average yield of all the 438 cows, 3,757 lb. milk, 3.5 test, 130.3 lb. fat.

These records for the periods of 6, 7 and 8 months would have to be increased slightly to arrive at the actual total production for the full period of lactation. A careful estimate of Ontario records indicates that an additional 12 per cent of milk and fat for the 6 months, 7 per cent for the 7 months, and 5 per cent for the 8 months records would be a liberal weight to add.

Hence, adding 12 per cent to the above 6 months average, the actual production for these 438 cows for their full milking period may be taken as 4,207 lb. milk, 145.9 lb. fat.



FIG. 1.—Grade Shorthorn Cow in Pine Grove Association, seven years old; eleven months' record 9,072 lbs. milk, 5.2 test, 472.9 lbs. fat.



FIG. 2.—Grade Holstein Cow in Central Smith Association, eight years old; ten months' record 13,370 lbs. milk, 3.0 test, 399.6 lbs. fat.

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AVERAGE YIELD OF 195 COWS TESTED FOR SIX MONTHS, 1907, IN PRINCE EDWARD ISLAND AND BRITISH COLUMBIA.

Name of Association.	Number of Cows.	Average Milk.	Average Test.	Average Fat.
		Lbs.		Lbs.
New Glasgow, P.E.I.....	47	3,102	3.8	117.9
Cowichan, B.C.....	48	3,191	4.2	132.8
Chilliwack, B.C.....	33	3,630	3.8	139.0
Eden Bank, B.C.....	67	3,751	4.1	153.0

Average yield of the above 195 cows, 3,436 lb. milk, 4.1 test, 137.7 lb. fat.

AVERAGE YIELD OF 609 COWS TESTED FOR SEVEN MONTHS, 1907, IN ONTARIO.

Name of Association.	Number of Cows.	Average Milk.	Average Test.	Average Fat.
		Lbs.		Lbs.
Kinmount.....	4	3,154	3.7	114.7
Lorneville..	11	3,252	3.5	115.6
Beaverton.....	27	3,614	3.6	130.8
Warsaw.....	39	3,762	3.4	131.0
Oak Leaf.....	42	3,860	3.6	139.3
Sheffield.....	18	3,550	3.9	141.7
Brockville.....	24	4,301	3.4	146.4
Woodburn.....	57	4,345	3.4	147.8
Milton.....	33	3,954	3.7	152.6
Shearer.....	21	4,551	3.3	152.9
Keene.....	39	4,308	3.5	153.1
Pine Grove.....	18	4,373	3.5	156.0
Spring Creek.....	32	4,433	3.5	158.0
Central Smith.....	41	4,866	3.3	163.0
North Oxford.....	33	5,136	3.4	176.0
East and West Oxford.....	26	5,412	3.3	181.7
Culloden.....	144	5,146	3.5	181.9

Average yield of the above 609 cows, 4,491 lb. milk, 3.5 test, 158.0 lb. fat.

Adding 7 per cent to these averages, as already explained, the actual production of these 609 cows for the full period of lactation may be taken as approximately 4,805 lb. milk, 169.0 lb. fat.

AVERAGE YIELD OF 153 COWS TESTED FOR 7 MONTHS, 1907, IN P. E. ISLAND AND BRITISH COLUMBIA.

Name of Association.	No. of Cows.	Average Milk.	Average Test.	Average Fat.
		Lbs.		Lbs.
New Glasgow, P.E.I.....	32	3546	3.5	124.1
Cowichan, B.C.....	22	3240	4.1	133.6
Chilliwack, B.C.....	18	4540	3.3	152.9
Eden Bank, B.C.....	81	4522	4.0	183.3

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Average yield of the above 153 cows, 4,136 lb. milk, 3·8 test, 160·2 lb. fat.

AVERAGE YIELD OF 477 COWS TESTED FOR 8 MONTHS, 1907, IN ONTARIO AND P. E. ISLAND.

Name of Association.	No. of Cows.	Average Milk.	Average Test.	Average Fat.
		Lbs.		Lbs.
Beaverton.....	27	3923	3.6	140.5
Lorneville.....	9	4039	3.5	140.1
Woodburn.....	17	4207	3.4	144.8
Oak Leaf.....	19	4333	3.7	160.0
Warsaw.....	21	4733	3.5	165.0
Milton.....	17	4438	3.8	166.6
Shearer.....	14	4755	3.5	170.1
Pine Grove.....	64	4876	3.5	171.0
Keene.....	19	4903	3.4	171.0
Brockville.....	22	5340	3.2	174.7
Sheffield.....	18	5075	3.6	185.5
Central Smith.....	38	5657	3.3	185.7
East and West Oxford.....	33	5715	3.3	190.1
Spring Creek.....	44	5306	3.6	192.6
Culloden.....	69	5873	3.4	203.3
North Oxford.....	33	6740	3.3	225.0
New Glasgow, P.E.I.....	13	4182	3.5	148.3

Average yield of these 477 cows recorded 8 months, 5,186 lb. milk, 3·46 test, 179·7 lb. fat.

With an additional 5 per cent to these average weights, as explained already, the approximate actual production of the 477 cows for their full milking period may be taken at 5,445 lb. milk, 188·6 lb. fat.

AVERAGE YIELD OF 186 COWS TESTED FOR 9 MONTHS, 1907, IN ONTARIO.

Name of Association.	No. of Cows.	Average Milk.	Average Test.	Average Fat.
	Lbs.	Lbs.		Lbs.
Milton.....	9	4,235	3.8	159.7
Shearer.....	12	4,996	3.3	165.7
Woodburn.....	4	4,547	3.6	166.1
Pine Grove.....	7	4,929	3.5	176.2
Warsaw.....	28	5,590	3.3	184.3
Lorneville.....	2	5,972	3.4	203.7
Central Smith.....	12	6,551	3.3	214.4
Spring Creek.....	66	6,183	3.6	223.1
Keene.....	4	6,627	3.4	222.9
North Oxford.....	23	6,736	3.3	228.9
East and West Oxford.....	19	7,301	3.4	248.0

Average yield of the 186 cows, 6,054 lb. milk, 3·46 test, 210·0 lb. fat.

AVERAGE YIELD OF 74 COWS TESTED 10 MONTHS, 1907, IN ONTARIO.

Name of Association.	No. of Cows.	Average Milk.	Average Test.	Average Fat.
		Lbs.		Lbs.
Shearer.....	10	5,961	3.5	211.3
Keene.....	7	6,262	3.4	217.1
Spring Creek.....	36	7,391	3.0	223.8
North Oxford.....	17	7,255	3.4	249.0
East and West Oxford.....	4	8,302	3.2	265.3

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Average yield of the 74 cows, 7,081 lb. milk, 3·2 test, 229·3 lb. fat.

AVERAGE YIELD OF 9 COWS TESTED 11 MONTHS, 1907, IN ONTARIO.

Name of Association.	No. of Cows.	Average Milk.	Average Test.	Average Fat.
		Lbs.		Lbs.
Shearer.....	2	6,952	3.5	242.5
Keene.....	3	7,673	3.5	267.2
North Oxford.....	4	7,802	3.5	273.2

Average yield of the 9 cows, 7,570 lb. milk, 3·5 test, 272·2 lb. fat.

ONE COW RECORDED FOR 12 MONTHS, 1907, IN ONTARIO.

Name of Association.	No. of Cows.	Milk.	Average Test.	Fat.
		Lbs.		Lbs.
North Oxford.....	1	8,455	3.1	265.0

The yields of 733 individual cows for periods of 8, 9, 10, 11 and 12 months in Ontario associations are classified as follows:—

Number of Months.	TOTAL YIELD OF MILK IN POUNDS.									Total No. of Cows.	Number of Herds Represented.	Number of Associations.
	1,000 to 2,000 lb.	2,000 to 3,000 lb.	3,000 to 4,000 lb.	4,000 to 5,000 lb.	5,000 to 6,000 lb.	6,000 to 7,000 lb.	7,000 to 8,000 lb.	8,000 to 9,000 lb.	9,000 to 10,000 lb.			
	No. of Cows.	No. of Cows.	No. of Cows.	No. of Cows.	No. of Cows.	No. of Cows.	No. of Cows.	No. of Cows.	No. of Cows.			
8.....		10	44	161	96	120	31	1	.....	463	91	16
9.	1		2	37	55	39	37	8	6	185	41	11
10.....			2		8	27	21	11	6	75	20	3
11.....						3	4	....	2	9	5	3
12.....								1	....	1	1	1
Total No. of cows.	1	10	48	198	159	189	93	21	14	733		

Thus, out of 733 cows, 189 of them, or over 25 per cent, gave yields of milk varying between 6,000 lb. and 7,000 lb. each, for the full lactation period. Of those 189, 120 of them were milking for 8 months, 39 for 9 months, 27 for 10 months, and 3 for 11 months.

LORNEVILLE, ONT., ASSOCIATION.

Sixteen cows tested for 6 months averaged 2,916 lb. milk, 3·5 test, 102·6 lb. fat.
Eleven cows tested 7 months averaged 3,252 lb. milk, 3·5 test, 115·6 lb. fat.

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Nine cows tested 8 months averaged 4,039 lb. milk, 3.5 test, 140.1 lb. fat.

Two cows tested 9 months averaged 5,972 lb. milk, 3.4 test, 203.7 lb. fat.

BEAVERTON, ONT., ASSOCIATION.

The cows in this association were mostly grade Shorthorns. The 24 cows recorded for 6 months had an average yield of 3,364 lb. milk, 3.6 test, 122.6 lb. fat. The highest individual yield of milk was 4,464 lb. from a 9-year-old. The highest yield of fat during the six months was 175.6 lb. also from a 9-year-old.

The 27 cows recorded for 7 months gave an average of 3,614 lb. milk, 3.6 test, 130.8 lb. fat, only slightly more than the 6 months' average. The best individual yield was 5,375 lb. milk, 3.4 test, 184 lb. fat from a 9-year-old.

Out of the 27 cows recorded for 7 months, 8 of them gave less than the average of those recorded for 6 months. Similarly, 8 out of the 27 recorded for 8 months gave less than the average yield of those recorded for 7 months.

The average yield of 27 cows tested for 8 months was 3,923 lb. milk, 3.6 test, 140.5 lb. fat. The best record for 8 months was from a 5-year-old that gave 5,765 lb. milk, 3.5 test, 202.4 lb. fat. An 8-year-old cow in the same herd gave 1,440 lb. milk and 34.5 lb. fat less than that record during the eight months. Some cows in the Central Smith Association gave over 8,000 lb. milk in 8 months.

These averages indicate clearly the general room for improvement; the highest yields recorded should show to interested members the possibilities of the district; and the contrasts noted above indicate the need for selection.

KINMOUNT, ONT., ASSOCIATION.

Nine cows recorded for 6 months had an average production of 2,539 lb. milk, 3.6 test, 89.4 lb. fat.

The best individual yield was 4,075 lb. milk, 3.2 test, 130.1 lb. fat, so that better results are obtainable.

The 4 cows tested 7 months gave, on the average, 3,154 lb. milk, 3.7 test, 114.7 lb. fat. The highest yield was 3,970 lb. milk, 3.9 test, 136.3 lb. fat.

This appears to be a district where more attention is necessary to the essentials of good dairying. More liberal feeding and better care of the cows already on hand should speedily work a transformation.

OAK LEAF, ONT., ASSOCIATION.

The average yield of 6 cows for 6 months was 3,006 lb. milk, 3.5 test, 107.5 lb. fat.

The average production of 42 cows for 7 months was 3,860 lb. milk, 3.6 test, 139.3 lb. fat.

The average production of 19 cows for 8 months was 4,333 lb. milk, 3.7 test, 160.0 lb. fat. The best yield during that period was 5,365 lb. milk, 3.9 test, 211.9 lb. fat; and the poorest yield was 3,839 lb. milk, 3.4 test, 128.4 lb. fat, from a 10-year-old cow.

WOODBURN, ONT., ASSOCIATION.

The average production of 34 cows for 6 months was 3,914 lb. milk, 3.4 test, 133.2 lb. fat.

In one herd a 4-year-old cow gave only 4,325 lb. milk (though this is higher than the general average production), but a 5-year-old in the same herd gave 6,530 lb. milk in the same time, just 2,205 lb. more.

The average production of 57 cows for 7 months was 4,345 lb. milk, 3.4 test, 147.8 lb. fat.

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The difference between the best and poorest yield of milk from two cows in the same herd was 3,332 lb., which at 90 cents per 100 lb. means \$29.98, or at the rate of \$4.28 per month difference in the returns per cow.

The average production of 17 cows for 8 months was 4,207 lb. milk, 3.4 test, 144.6 lb. fat.

The average production of 4 cows for 9 months was 4,547 lb. milk, 3.6 test, 166.1 lb. fat.

BROCKVILLE, ONT., ASSOCIATION.

The average yield of 21 cows for 6 months was 4,184 lb. milk, 3.3 test, 140.0 lb. fat.

The average production of 24 cows tested for 7 months was 4,301 lb. milk, 3.4 test, 146.4 lb. fat.

One herd averaged 4,913 lb. milk against 3,421 lb. milk produced by another herd. If the 6 cows in the latter herd had yielded as well on the average as the former herd, they could have put another \$81 into the pocket of their owner in the 7 months.

The average production of 22 cows for 8 months was 5,340 lb. milk, 3.2 test, 174.7 lb. fat.

The extremes here are noticeable: a 10-year-old cow gave 7,730 lb. milk, 3.4 test, 265 lb. fat, but a 14-year-old cow gave only 2,650 lb. milk, 3.5 test, 94.4 lb. fat during the same time. This is practically equivalent to saying that one cow is three times as valuable as the other.

WARSAW, ONT., ASSOCIATION.

The average production of 70 cows for 6 months was 3,521 lb. milk, 3.4 test, 121.1 lb. fat. A 6-year-old gave the poorest yield of all the 70 cows, namely 3,130 lb. milk, 3.0 test, 93.3 lb. fat, and a 3-year-old gave the best yield, namely 5,410 lb. milk, 3.6 test, 196.4 lb. fat.

One herd of 15 cows averaged only 3,185 lb. milk, while a herd of 9 close by gave 4,225 lb. milk each. If the 15 cows had been as good producers as the 9, they would have given an extra weight of 15,600 lb. milk, which at 90 cents per 100 lb. would have brought in to their owner an additional sum of \$140.40 in the six months.

The average production of 39 cows for 7 months was 3,762 lb. milk, 3.4 test, 131 lb. fat. The highest yield of any one cow was only 4,540 lb. milk, 3.7 test, 171.2 lb. fat.

In this lot of cows recorded 7 months the best cow in one herd brought in \$42.80, while the poorest earned only \$24.05, or \$2.68 per month less. What a revolution there would be in cow land if each individual earned only one dollar per month more than she does at present. Another twenty million dollars is only a low estimate of the extra sum that might come into the pockets of Canadian farmers from this slight increase in the milk production. Is not this well worth keeping in sight?

The average production of 21 cows for 8 months was 4,733 lb. milk, 3.5 test, 165.0 lb. fat.

Twenty-eight cows tested 9 months averaged 5,590 lb. milk, 3.3 test, 184.3 lb. fat.

The highest and lowest yields for this period were both in the same herd of 13 cows; in the one case a 6-year-old gave 3,882 lb. milk, 3.3 test, 124.3 lb. fat, while the best cow gave 7,557 lb. milk, 3.3 test, 244.4 lb. fat.

PINE GROVE, ONT., ASSOCIATION.

The average production of 31 cows for 6 months was 3,120 lb. milk, 3.4 test, 107.4 lb. fat. The variation was all the way from 2,695 lb. milk to 4,050 lb.; in each case the cow was 11 years old.

The average production of 18 cows for 7 months was 4,373 lb. milk, 3.5 test, 1,560 lb. fat.

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The average production of 64 cows for 8 months was 4,876 lb. milk, 3.5 test, 171.0 lb. fat. The poorest yield was that of a 6-year-old cow giving 3,230 lb. milk, 3.6 test, 117.0 lb. fat; while the best yield was that of a 5-year-old, 6,730 lb. milk, 3.4 test, 233.5 lb. fat, practically double.

The average yield of 7 cows for 9 months was 4,929 lb. milk, 3.5 test, 176.2 lb. fat.

CENTRAL SMITH, ONT., ASSOCIATION.

The average yield of 11 cows for 6 months was 4,056 lb. milk, 3.3 test and 132.5 lb. fat. The best individual yield was 4,880 lb. milk, 3.0 test, 145 lb. fat. Five cows in two herds, being representatives of the Jersey, Shorthorn and Ayrshire breeds, as well as so-called 'scrub' animals were below the average yield, indicating that selection is necessary and requisite as well in one breed as another. No one of these 5 cows was under 5 years old; one was 12.

Forty-one cows recorded for 7 months had an average yield of 4,866 lb. milk, 3.3 test, 163 lb. fat. Herd 19 has the very satisfactory average from 20 cows, including 2 3-year-olds, for 7 months, of 5,243 lb. milk and 172.5 lb. fat, thus being well above the average. In this herd the highest individual yield was 6,850 lb. milk and 202.9 lb. fat. As a contrast to this herd average, another herd of 5 cows had an average yield of only 3,726 lb. milk, 3.2 test, 120.9 lb. fat; the youngest cow was 6 years old, and the best individual yield was 4,430 lb. milk, 3.1 test, 138.0 lb. fat.

Thirty-eight cows tested 8 months gave an average yield of 5,657 lb. milk, 3.3 test, 185.7 lb. fat.

The average yield of herd 20 for 8 months was 7,246 lb. milk, 3.4 test, 246.4 lb. fat. One would naturally suppose that must be a fine herd. A closer examination of the records reveals immediately that the high average was due entirely to the heavy production of one cow, an 8-year-old that gave 11,720 lb. milk, 2.9 test, 342.8 lb. fat. Six of the remaining seven animals were below the herd average. The lowest yield was from a 4-year-old that gave 5,680 lb. milk, 3.8 test, 215 lb. fat, a decidedly different yield from 11,720 lb. This, again, lends emphasis to the paramount importance of considering each animal in the herd on its own individual merits, its ability to produce milk and butter fat economically, instead of resting content with fair 'average' yields.

Twelve cows tested 9 months gave, on the average, 6,551 lb. milk, 3.3 test, 214.4 lb. fat. The best yield was 8,152 lb. milk, 3.2 test, 258.5 lb. fat from a 7-year-old grade.

KEENE, ONT., ASSOCIATION.

The average yield of 21 cows for 6 months was 4,052 lb. milk, 3.3 test, 137.2 lb. fat.

The average production of 39 cows for 7 months was 4,308 lb. milk, 3.5 test, 153.1 lb. fat. One herd of 4 cows averaged only 3,293 lb. milk each in the 7 months. Another herd of 5 cows averaged 224.6 lb. milk more, or 5,539 lb. each during the same time. The 4 cows should easily have brought in \$15 each more than they did to their owner, and probably would have done so if they had had some green soiling crops.

The average production of 19 cows for 8 months was 4,903 lb. milk, 3.4 test, 171 lb. fat.

In the group tested for 8 months one herd of 4 cows had an average of 3,985 lb. milk, 3.5 test, 141.4 lb. fat; the best yield was 5,815 lb. milk, 3.2 test, 183.5 lb. fat, and the poorest yield was from a 7-year-old, 2,645 lb. milk, 3.2 test, 85.4 lb. fat, or almost 100 lb. of fat less.

Another lot of 4 cows gave, in 8 months, 6,558 lb. milk, 3.3 test, 219.6 lb. fat, or an average of 2,573 lb. milk each more than the 4 noted above. In this herd the highest yield was 8,135 lb. milk, 3.6 test, 292.8 lb. fat; and the lowest, from a

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4-year-old, 4,990 lb. milk, 3.1 test, 156.3 lb. fat, or 136.5 lb. fat less than the highest yield.

This clearly indicates the general unevenness in herds, in average and good herds alike, and the necessity of this work of noting the actual production of each single individual.

The average yield of 4 cows for 9 months was 6,627 lb. milk, 3.4 test, 222.9 lb. fat. The highest was 8,151 lb. milk, 3.2 test, 264.3 lb. fat.

For 10 months, the average production of 7 cows was 6,262 lb. milk, 3.4 test, 217.1 lb. fat, or a lower average than those recorded for 9 months. The highest yield was 6,968 lb. milk, 3.3 test, 229.8 lb. fat.

The average production for 11 months of 3 cows was 7,673 lb. milk, 3.5 test, 267.2 lb. fat. The best individual cow gave 8,505 lb. milk, 3.5 test, 294.1 lb. fat.

SHEARER, ONT., ASSOCIATION.

Twenty cows tested for 6 months averaged 3,990 lb. milk, 3.3 test, 131 lb. fat.

Twenty-one cows tested for 7 months averaged 4,551 lb. milk, 3.3 test, 152.9 lb. fat.

The average yield of 14 cows for 8 months was 4,755 lb. milk, 3.5 test, 170.1 lb. fat.

Twelve cows tested for 9 months averaged, 4,996 lb. milk, 3.3 test, 165.7 lb. fat. The highest yield was 5,330 lb. milk, 3.4 test, 191.7 lb. fat, valued at 25 cents per lb. fat, \$47.92; but the lowest yield was only 3,250 lb. milk, 3.7 test, 118.9 lb. fat, valued at 25 cents per lb. fat, \$29.72, or \$18.20 less.

For 10 months, 10 cows gave an average yield of 5,961 lb. milk, 3.5 test, 211.3 lb. fat.

Two cows tested for 11 months averaged 6,952 lb. milk, 3.5 test, 242.5 lb. fat.

ROCKFORD, ONT., ASSOCIATION.

The average production of 28 cows for 6 months was 5,206 lb. milk, 3.3 test, 171.4 lb. fat. One herd of 20 cows had the very satisfactory average of 5,656 lb. milk, 3.2 test, 183.2 lb. fat; so evidently, the remaining eight cows must have been dreadfully low in yield to affect the general average so materially.

The best individual record was from a 6-year-old grade that gave 7,012 lb. milk, 3.1 test, 222.7 lb. fat. The lowest record was from an 11-year-old that gave only 4,080 lb. milk, 3.5 test, 143.0 lb. fat, or nearly twenty dollars worth of butter fat less than the best record.

SHEFFIELD, ONT., ASSOCIATION.

The average production of 30 cows for 6 months was 3,350 lb. milk, 3.7 test, 124.4 lb. fat. The best herd average was 3,627 lb. milk, 3.7 test, 135.2 lb. fat from 7 cows. The highest individual yield was 4,730 lb. milk 3.5 test, 165.8 lb. fat; while in the same herd a 10-year-old cow gave only 2,340 lb. milk, 4.0 test, 93.1 lb. fat.

Eighteen cows in 7 months averaged 3,550 lb. milk, 3.9 test, 141.7 lb. fat. Four cows comprising one herd gave only 2,308 lb. milk each, but another herd of four cows produced 4,245 lb. milk each.

The average yield of 18 cows for 8 months was 5,075 lb. milk, 3.6 test, 185.5 lb. fat. The lowest yield of milk was 4,040 lb. from a 3-year-old, while the highest, from an 8-year-old in the same herd, was 2,700 lb. *more*, or 6,740 lb. in all. With milk at 90 cents per 100 lb. the one cow's revenue was \$24.30 greater than the other's.

MILTON, ONT., ASSOCIATION.

The records for 6 months show 17 cows to have given an average of 3,134 lb. milk, 3.8 test, 120 lb. fat. The best individual yield was 5,584 lb. milk.

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The average production of 33 cows for 7 months was 3,954 lb. milk, 3.7 test, 152.6 lb. fat. One herd of 7 cows gave an average yield of 4,510 lb. milk, 3.9 test, 177.8 lb. fat; but another herd of 5 cows gave only 3,041 lb. milk, 3.6 test, 110.2 lb. fat.

Seventeen cows' records for 8 months averaged 4,438 lb. milk, 3.8 test, 166.6 lb. fat.

The highest yield of any one cow was 7,630 lb. milk, 3.2 test, 242.3 lb. fat. The 5 best cows gave altogether 29,536 lb. milk, 1,049.3 lb. fat; but the 5 poorest gave only 17,276 lb. milk, 658.4 lb. fat. This is a difference of 12,260 lb. milk and 390.9 lb. fat; or, with fat at 25 cents per lb. the 5 best cows recorded for 8 months gave \$97.72 more than the 5 poorest.

Nine cows were tested 9 months, and gave 4,235 lb. milk, 3.8 test, 159.7 lb. fat. This means one whole month longer in which to milk them every night and morning for less milk than those milked 8 months.

Taking all the cows recorded for 6, 7 and 8 months, and calculating fat at 25 cents per lb., there was an average difference of \$4.13 per month between the earning power of the best and poorest cow. If these records had been extended to 10 months, which is not too long a milking period, the difference in revenue between two cows would have stood at \$41.30. This is what testing reveals.

CULLODEN, ONT., ASSOCIATION.

The average production of 38 cows recorded for 6 months was 4,323 lb. milk, 3.6 test, 154.3 lb. fat.

There was but very slight variation among the general average production of each herd, but between the best and poorest cow in the same herd the difference in yield was as high as 2,760 lb. milk and 98 lb. fat, and in no case was the poor yield from any cow under 5 years old.

The average yield of 144 cows for 7 months was 5,146 lb. milk, 3.5 test, 181.9 lb. fat. One herd of 54 cows had an average of 5,478 lb. milk, 3.6 test, 201.1 lb. fat. The highest individual yield of any cow was 8,570 lb. milk, 3.3 test, 288.9 lb. fat; the lowest yield in the same herd was from a 6-year-old cow that gave 4,119 lb. milk, 3.8 test, 156.2 lb. fat, or *less than half* the weight of milk.

The average yield of 69 cows tested for 8 months was 5,873 lb. milk, 3.4 test, 203.3 lb. fat. The average yield of 23 cows in one herd was 6,018 lb. milk, 3.5 test, 209.3 lb. fat. The best individual production was 8,220 lb. milk, 3.2 test, 266.0 lb. fat; the poorest was, from a 7-year-old, 4,240 lb. milk, 3.4 test, 144.2 lb. fat.

The poorest cow in each of the 5 herds recorded for 8 months was, on the average, 1,256 lb. milk lower than the general average of production. There are probably thousands of cows now being kept that should easily earn at least eleven dollars each more during the year than they do at present.

SPRING CREEK, ONT., ASSOCIATION.

The average yield of 20 cows for 6 months was 3,369 lb. milk, 3.5 test, 119.7 lb. fat.

The average production of 32 cows for 7 months was 4,433 lb. milk, 3.5 test, 158.0 lb. fat. The lowest yield was 3,628 lb. milk, 3.1 test, 111.1 lb. fat from a 6-year-old cow; but the highest yield was 6,460 lb. milk, 3.6 test, 230.2 lb. fat.

The average production of 44 cows for 8 months was 5,306 lb. milk, 3.6 test, 192.6 lb. fat.

One herd of 6 cows had an average of 6,602 lb. milk, 3.4 test, 228.8 lb. fat.

The highest individual yield was 7,080 lb. milk, 3.8 test, 264.4 lb. fat, but the lowest was, from a 12-year-old, 3,370 lb. milk, 4.1 test, 136.6 lb. fat. The possibilities are evident.

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The average production of 66 cows for 9 months was 6,183 lb. milk, 3.6 test, 223.1 lb. fat.

One herd of 6 cows gave the very satisfactory average of 9,260 lb. milk, 3.3 test, 306.8 lb. fat.

In another herd the best individual yield was 10,570 lb. milk, 3.2 test, 335.2 lb. fat from a 7-year-old; in the same herd a 7-year-old, also, gave the poorest yield, scarcely half as much.

COMPARISONS FOR 10 MONTHS, 1907.

Average Production of Herds.					Yield of Best Cow in each Herd.				Yield of Poorest Cow in each Herd.			
Herd No.	No. of Cows in Herd.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A	5	7,068	3.5	246.2	7	10,570	3.2	335.2	5	5,510	3.6	197.9
B	5	6,428	4.4	280.3	8	6,980	4.4	305.3	6	4,780	5.1	244.9
C	8	8,597	3.5	302.9	7	10,944	3.4	374.7	4	7,100	3.6	253.0
D	6	9,373	3.8	352.3	8	10,528	4.4	464.1	10	9,450	3.7	352.4

The average production of 36 cows for 10 months was 7,391 lb. milk, 3.0 test, 223.8 lb. fat.

While 3 individual records are particularly encouraging, it should be noted that the 4 poorest cows in each herd are just 3,045 lb. milk, 3.6 test, 108 lb. lower than the yields of the best cows. Such a marked difference indicates the room that exists for raising the production of some individual animals, or else getting rid of them. For instance, can the poorest cow in herd B be made to yield as much as the poorest cow in herd D, or should she be discarded?

NORTH OXFORD, ONT., ASSOCIATION.

The average production of 16 cows for 6 months was 3,717 lb. milk, 3.5 test, 129.1 lb. fat.

The average yield of 33 cows for 7 months was 5,136 lb. milk, 3.4 test, 176.0 lb. fat. As revealing differences in yield between herds and individuals the following comparisons are interesting.

COMPARISONS FOR 7 MONTHS.

Herd.	No. of Cows in herd.	Herd Average.			Yield of Best Cow.				Yield of Poorest Cow.			
		Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A	4	3912	3.4	132.7	5	4,616	3.3	151.6	10	3,325	3.9	133.0
B	8	5053	3.5	175.6	6	6,000	3.1	213.2	5	4,553	3.4	157.6
C	6	7178	3.3	240.7	10	6,875	3.9	269.4	5	7,100	3.1	217.5

Two cows in herd C gave within 92 lb. milk of the total weight given by four cows in herd A. The poorest cow in herd A gave 3,775 lb. milk, 84.5 lb. fat less than the poorest cow in herd C.

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The average production of 33 cows for 8 months was 6,740 lb. milk, 3.3 test, 225 lb. fat. One herd of 12 cows gave an average of 7,498 lb. milk, 3.3 test, 249.2 lb. fat. The lowest yield of a 6-year-old cow in one herd was 6,202 lb. milk, 3.1 test, 190.1 lb. fat. The highest yield of milk was 8,860 lb., testing 2.9.

The average yield for 9 months of 23 cows was the same weight of milk as given by those recorded 8 months, namely, 6,736 lb., testing the same. There was no higher yield in 9 months than the 8,860 lb. given in only 8 months. In fact the heaviest flow was 8,540 lb., testing 3.3, thus containing 27.2 lb. fat more than the 261.0 lb. in the 8,860 lb. milk.

The average production of 17 cows for 10 months was 7,255 lb. milk, 3.4 test, 249.0 lb. fat. The best yield was 8,750 lb., testing 3.5, and the poorest was, from a 7-year-old, 5,415 lb. testing 3.6.

Four cows were recorded for 11 months; the average was 7,802 lb. milk, 3.5 test, 273.2 lb. fat. The highest yield was, from a 3-year-old, 12,495 lb. milk, 3.2 test, 401.3 lb. fat. The photo of this cow was in last year's report. The lowest yield was also from a 3-year-old, 6,225 lb. milk, 3.5 test, 222.3 lb. fat.

One cow recorded for 12 months gave 8,455 lb. milk, 3.1 test, 265 lb. fat.

EAST AND WEST OXFORD, ONT., ASSOCIATION.

The average yield of 26 cows for 6 months was 4,322 lb. milk, 3.5 test, 151.3 lb. fat. A 6-year-old cow gave the poorest result, 2,760 lb. milk, 3.6 test, 100.9 lb. fat; while the best yield was 6,030 lb. milk, 3.5 test, 213.6 lb. fat to the credit of a 9-year-old. This was more than twice as much.

The average production of 26 cows for 7 months was 5,412 lb. milk, 3.3 test, 181.7 lb. fat. Another 6-year-old cow in another herd was again responsible for the lowest yield, 3,900 lb. milk, 3.3 test, 130.3 lb. fat. During the same 7 months an 8-year-old gave the highest yield, 8,141, lb. milk, 3.4 test, 273.3 lb. fat, which was again double the yield of the poorest cow.

The average production of 33 cows for 8 months was 5,715 lb. milk, 3.3 test, 190.1 lb. fat. When during that time one cow gave 294.8 lb. fat, and another cow only 131.4 lb. fat, the advantages of keeping records is immediately apparent.

COMPARISONS FOR 8 MONTHS, 1907.

Herd No.	Herd Average.				Highest Individual Yield.				Lowest Individual Yield.			
	No. of Cows.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A	10	4,311	3.3	146.2	8	5,210	3.4	179.0	4	3,620	3.6	131.4
B	9	5,577	3.4	193.0	4	5,880	3.8	223.8	6	5,305	3.3	176.5
C	6	7,680	3.2	248.9	10	8,145	3.6	294.8	7	8,607	3.0	261.5

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The 19 cows recorded for 9 months averaged 7,301 lb. milk, 3.4 test, 248 lb. fat. The herd and individual records are so dissimilar that a perusal of the details below is suggestive in the extreme.

COMPARISONS FOR 9 MONTHS, 1907.

Herd No.	Herd Average.				Highest Individual Yield.				Lowest Individual Yield.			
	No. of Cows.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A	11	6,814	4.0	242.6	5	11,535	3.2	364.3	5	4,260	3.8	162.1
B	6	8,423	3.1	266.5	3	9,769	3.7	357.8	8	6,649	3.0	202.8

The average production of 4 cows for 10 months was 8,302 lb. milk, 3.2 test, 2,653 lb. fat.

NEW GLASGOW, PRINCE EDWARD ISLAND, ASSOCIATION.

Forty-seven cows recorded for 6 months gave an average yield of 3,102 lb. milk, 3.8 test, 117.9 lb. fat. Four cows comprising one dairy gave only 2,800 lb. milk, 3.7 test, 103.9 lb. fat; but the average of another dairy herd of 7 cows was 3,348 lb. milk, 4.1 test, 139.0 lb. fat. One 5-year-old cow gave only 2,575 lb. milk, 3.4 test, 88.3 lb. fat; but an 8-year-old gave 3,860 lb. milk, 3.8 test, 148.6 lb. fat, thus earning at least \$15 more in the 6 months.

The average production of 32 cows for 7 months was 3,546 lb. milk, 3.5 test, 124.1 lb. fat. The lowest yield of milk from any one cow was 3,119 lb. testing 3.7, and the highest was 4,843 lb. testing 3.2 per cent fat.

Thirteen cows averaged for 8 months 4,182 lb. milk, 3.6 test, 148.3 lb. fat.

COWICHAN, B.C., ASSOCIATION.

Forty-eight cows in 14 herds recorded for 6 months gave an average yield of 3,191 lb. milk, 4.2 test, 132.8 lb. fat.

Twenty-two cows in 7 herds recorded for 7 months gave an average yield of 3,240 lb. milk, 4.1 test, 133.6 lb. fat.

EDEN BANK, B.C., ASSOCIATION.

Sixty-seven cows were recorded for 6 months, with an average production of 3,751 lb. milk, 4.1 test, 153.0 lb. fat.

The poorest herd had an average yield of 110.7 lb. fat, and the best herd gave 210.8 lb. fat. In the one case 5 cows gave a total yield of 553.7 lb. fat, while in the other case 6 cows gave a total yield of 1,264.9 lb. fat.

The extremes of milk yield in the 6 months were 2,165 lb. from the poorest, and 6,020 lb. from the best cow; 33 cows out of the total of 67 gave less than 3,700 lb.

In 13 herds 81 cows were recorded for 7 months, the average production per cow being 4,522 lb. milk, 4.0 test, 183.3 lb. fat. The lowest average herd yield was from a lot of 3 cows giving only 3,423 lb. milk, 4.0 test, 137.3 lb. fat. Three herds are worthy of special note; one of 28 cows averaged 4,550 lb. milk, 4.2 test, 192 lb. fat, this included the yields of 5 2-year-olds and 5 3-year-olds; another herd of 10 cows averaged 5,588 lb. milk, 3.8 test, 214 lb. fat, and one herd of 5 cows averaged 5,934 lb. milk, 3.9 test, 228.0 lb. fat.

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It will be observed that the poorest herd is 1,099 lb. milk and 46.0 lb. fat below the average yield, while the best herd is actually 2,511 lb. milk and 90.7 lb. fat above.

The lowest individual yield in all herds was on the average 1,856 lb. milk and 75.4 lb. fat less than the highest during the 7 months. Make a liberal deduction of one-third from this difference, and the fact appears that scores of cows in this association should have brought in about \$15 apiece more than they did in 7 months.

CHILLIWACK, B.C., ASSOCIATION.

Thirty-three cows were tested for 6 months with an average record of 3,630 lb. milk, 3.8 test, 139.0 lb. fat.

Valuing fat at 25 cents per lb., the poorest individual yield in one herd was \$11.38 below the best individual yield.

Eighteen cows were tested for 7 months, and averaged 4,540 lb. milk, 3.3 test, 152.9 lb. fat.

The highest yield was 6,364 lb. milk, 4.2 test, 266.8 lb. fat, but the lowest was less than half that, or only 3,105 lb. milk, 3.6 test, 113.7 lb. fat from a 7-year-old cow that calved April 11.

This system of weighing and sampling certainly does reveal some unprofitable servants.

ASSOCIATIONS IN QUEBEC.

AVERAGE YIELD OF 652 COWS TESTED FOR 6 MONTHS, 1907, IN QUEBEC.

Name of Association.	No. of Cows.	Average Milk.	Average Test.	Average Fat.
		Lbs.		Lbs.
St. Armand.....	30	2,586	4.0	107.1
Hatley.....	13	2,782	3.9	110.2
Dixville.....	37	2,778	4.0	111.3
Cowansville.....	24	2,961	3.9	115.0
St. Dominique.....	52	2,716	4.6	116.6
St. Barnabe.....	14	3,088	3.8	117.7
St. Jerome.....	15	2,858	4.2	119.7
Henryville.....	101	3,278	3.7	123.0
Coaticook.....	25	3,216	4.0	128.2
Ste. Emelie.....	74	2,985	4.2	125.5
St. Marc.....	63	3,324	3.9	130.0
Chicoutimi.....	9	3,153	4.1	131.1
St. Prime.....	20	3,119	4.2	132.8
St. Edwidge.....	33	3,494	3.8	133.0
Mansonville.....	6	3,375	4.2	142.4
Ormstown.....	35	3,953	3.7	147.0
Bagotville.....	9	3,738	4.1	152.7
Lotbiniere.....	34	3,837	4.1	156.7
St. Prosper.....	58	4,211	4.0	170.0

Average yield of all the 652 cows, 3,266 lb. milk, 4.0 test, 130.3 lb. fat.

Probably the low average yields in one or two districts can be accounted for by the fact that the owners were not working the farms, but had them rented out. Hence there was not much incentive to the tenants to test, or, should we not rather say, the tenants did not seem to realize the need or importance of looking for better returns per cow.

When such a startling difference is noticed as is found between the average yields at St. Armand and St. Prosper, equal to 1,616 lb. milk and 66.2 lb. fat per cow in 6 months, it is surely time to see if many cows cannot be made to earn at least \$16 more.

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It will be observed how many districts fall below the average yield of milk and fat; while on the other hand the 58 cows at St. Prosper were as much as 900 lb. milk and 38.8 lb. fat above the average.

AVERAGE YIELD OF 473 COWS TESTED FOR 7 MONTHS, 1907, IN QUEBEC.

Name of Association.	No. of Cows.	Average Milk.	Average Test.	Average Fat.
		Lbs.		Lbs.
St. Jerome.....	24	3,177	3.9	123.4
St. Armand.....	16	3,181	4.1	124.0
St. Dominique.....	30	3,090	4.2	129.1
St. Emelie.....	20	3,073	4.2	130.7
Hatley.....	47	3,291	4.0	130.7
Dixville.....	26	3,470	4.0	136.8
Lotbiniere.....	13	3,575	3.9	140.4
St. Edwidge.....	57	3,680	3.9	143.4
Henryville.....	23	3,740	3.8	143.5
Chicoutimi.....	30	3,512	4.1	144.2
Cowansville.....	19	3,689	3.9	144.8
Coaticook.....	29	3,984	4.0	159.3
Bagotville.....	81	4,096	4.2	164.7
Mansonville.....	16	4,281	4.1	176.0
St. Marc.....	18	4,634	3.9	182.0
Ormstown.....	6	6,085	3.3	199.0
St. Prosper.....	6	5,448	3.9	214.0
St. Barnabe.....	2	3,272	4.1	135.7

Average yield of all the 473 cows, 3,749 lb. milk, 4.0 test, 149.0 lb. fat.

AVERAGE YIELD OF 166 COWS TESTED FOR 8 MONTHS, 1907, IN QUEBEC.

Name of Association.	No. of Cows.	Average Milk.	Average Test.	Average Fat.
		Lbs.		Lbs.
Dixville.....	40	4,024	3.8	154.5
Chicoutimi.....	52	3,900	4.0	158.8
Hatley.....	19	4,094	4.0	162.5
Cowansville.....	28	4,591	4.0	185.9
St. Edwidge.....	27	4,496	3.8	172.7

Average yield of all the 166 cows, 4,165 lb. milk, 4.0 test, 165.0 lb. fat.

AVERAGE YIELD OF 49 COWS TESTED FOR 9 MONTHS, 1907, IN QUEBEC.

Name of Association.	No. of Cows.	Average Milk.	Average Test.	Average Fat.
		Lbs.		Lbs.
Hatley.....	13	4,186	4.0	167.4
Dixville.....	15	4,802	3.7	178.3
Cowansville.....	15	4,281	4.3	183.5
St. Edwidge.....	6	4,342	4.2	185.3

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Average yield of all the 49 cows, 4,423 lb. milk, 4.0 test, 177.9 lb. fat.

AVERAGE YIELD OF 18 COWS TESTED FOR 10 MONTHS, 1907, IN QUEBEC.

Name of Association.	No. of Cows.	Average Milk.	Average Test.	Average Fat.
	Lbs.			Lbs.
Cowansville.....	14	5,395	4.7	254.6
St. Edwidge.....	4	4,889	3.8	187.7

Average yield of all the 18 cows, 5,282 lb. milk, 4.5 test, 239.7 lb. fat.

AVERAGE YIELD OF 10 COWS TESTED FOR 11 MONTHS, 1907, IN QUEBEC.

Name of Association.	No. of Cows.	Average Milk.	Average Test.	Average Fat.
	Lbs.			Lbs.
St. Armand.....	7	4,772	4.1	209.5
St. Edwidge.....	3	4,793	4.5	217.0

Average yield of the 10 cows, 4,778 lb. milk, 4.4 test, 211.8 lb. fat.

AVERAGE YIELD OF COWS TESTED FOR 12 MONTHS, 1907, QUEBEC.

Name of Association.	Total Number of Cows.	AVERAGE YIELD.		
		Milk.	Test.	Fat.
		Lbs.		Lbs.
St. Edwidge.....	20	4,496	3.9	176.4
St. Armand.....	113	4,375	4.1	180.4
Cowansville.....	34	5,620	4.7	264.0

Average yield of all the 167 cows, 4,631 lb. milk, 4.2 test, 197 lb. fat.

This average yield for a full period of 12 months must be understood as including one or two particularly good herds in the respective districts, and is not necessarily indicative of the general average yield in the province.

Further, the figures for the 34 cows in three herds at Cowansville are pregnant with suggestion, because one poor herd is included with a particularly low average from 7 common grade cows of 2,780 lb. milk, 4.0 test, 111 lb. fat. This indicates again how misleading ‘averages’ may be. These seven cows are credited in the ‘average’ of the 167 with almost double their actual yield.

The second herd in the Cowansville group is one of 6 pure-bred Guernseys and one grade Shorthorn with an average of 5,680 lb. milk, 256.8 lb. fat and 4.5 test, which is more than double that of the herd preceding.

The third herd is a lot of 20 high grade Jerseys that produced on the average 6,593 lb. milk, 4.8 test, 319.8 lb. fat. The owner of this herd estimates the average cost of feed at \$45 per cow for the 12 months. This last highly satisfactory record is the result of some years’ careful work of recording the individual yield of each cow and discarding the poorest, and may be taken as a standard attainable by any intelligent farmer in Quebec.

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The yields of 410 individual cows for periods of 8, 9, 10, 11 and 12 months in Quebec associations are classified as follows:—

Number of Months.	TOTAL YIELD OF MILK IN POUNDS.									Total No. of Cows.	Number of Herds Repre- sented.	Number of Associa- tions.
	1,000 to 2,000 lb.	2,000 to 3,000 lb.	3,000 to 4,000 lb.	4,000 to 5,000 lb.	5,000 to 6,000 lb.	6,000 to 7,000 lb.	7,000 to 8,000 lb.	8,000 to 9,000 lb.	9,000 to 10,000 lb.			
	No. of Cows.	No. of Cows.	No. of Cows.	No. of Cows.	No. of Cows.	No. of Cows.	No. of Cows.	No. of Cows.	No. of Cows.			
8.....	2	16	59	48	32	9	.....	.....	.....	166	23	5
9.....	3	8	23	12	3	.....	.....	.....	.....	49	12	4
10.....	.....	.....	1	3	4	6	4	.....	.....	18	6	2
11.....	2	1	2	3	1	.....	.....	.....	1	10	3	2
12.....	4	19	30	48	38	16	7	2	3	167	11	3
Total No. of cows.	11	44	115	114	78	31	11	2	4	410		

Thus, out of 410 cows, 114 of them, or 28 per cent, gave yields of milk varying between 4,000 and 5,000 lb. each for the full lactation period. Of these 114, 48 of them were milking for 8 months, 12 for 9 months, 3 for 10 months, 3 for 11 months and 48 for 12 months.

Mr. I. Trudel, who was doing the testing at five centres in Quebec, reports:—

‘In general, there is not as much interest in dairying as some years ago, in the territory I have been travelling in. This is due to the changed conditions by which feed has doubled in price, while labour is also higher, and cows have remained about the same with regard to their capacity as producers. Farmers are inclined to pronounce dairying unprofitable, because it is not comparatively as remunerative as formerly; while it is only their imperfect methods of breeding and feeding that are responsible for this, no improvement having taken place in the quality of the stock or in the production of feed. The same old system of keeping cows on pasture, hay, straw and grain seems to exist generally with but little progress in raising soiling crops and roots. There is no silo in any of the localities where I have been working this summer. There is a tendency to neglect the cows for other lines of farming such as producing hay and grain for the market; or to devote time to lumbering and other commercial operations.

‘St. Prosper, St. Marc, and Lotbinière, where the soil is of the very best quality, are producing large quantities of hay, while the chief products at Champlain are oats and potatoes. The conditions at Ste. Emelie are different, the land being poorer and farms in general smaller; and I have found the people there are more easy to interest in dairy matters, as they have to depend a good deal more on their cows for a large proportion of their income.

‘I do not think it is an exaggeration to say that in too many parts of Quebec, dairying has only been regarded until now as the most profitable way of disposing of a waste product, milk; keeping cows being considered essential to maintaining the fertility of the soil. The proportion of farmers who have specialized in dairying, making it a business by which they make their farms earn them more profit, is still small. But with the high prices now ruling for all farm products, the cost of keeping cows is forced on the attention of farmers, and our campaign for the improvement of dairy herds is most opportune.

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'Unfortunately, farmers are very ignorant on matters concerning breeding and feeding of dairy cattle, and in most cases are sceptical as to the possibility for them coming to own herds of high producing cows, such as are sometimes pointed out to them; or of producing with advantage the crops recommended by the best authorities as good feed for dairy cows. Information on these subjects is very slowly diffused among the farmers in Quebec, as we have no dairy papers in French, and the large daily newspapers do not devote much space to agricultural matters.'

ST. PROSPER, QUE., ASSOCIATION.

The average production of 58 cows for 6 months was 4,211 lb. milk, 4.0 test, 170.0 lb. fat. The poorest yield was 2,910 lb. milk, 3.7 test, 107.8 lb. fat from an 8-year-old cow; but the best yield was 6,775 lb. milk, 4.0 test, 272.0 lb. fat, also from an eight-year-old. There should not be much doubt as to which is the more profitable cow.

The average production of 16 cows for 7 months was 5,548 lb. milk, 3.9 test, 214.0 lb. fat.

ST. MARC, QUE., ASSOCIATION.

The average production of 63 cows for 6 months was 3,324 lb. milk, 3.9 test, 130.0 lb. fat.

Taking the best cow's yield in each of the eight herds represented, it is found that each gave nearly 700 lb. milk and 38 lb. fat above this general average; and when it is pointed out that the best yield of one cow was 1,676 lb. milk and 87 lb. fat above the average yield, and actually 2,750 lb. milk and 138.8 lb. fat above the poorest yield of 2,250 lb. milk, 3.4 test, 78.2 lb. fat given by an 8-year-old, then the immense possibilities involved in selection should begin to dawn on all concerned.

The average production of 18 cows for 7 months was 4,634 lb. milk, 3.9 test, 182.0 lb. fat. In one herd of six cows the best cow gave 1,529 lb. milk and 58.9 lb. fat more than the 5-year-old poorest cow in that same herd during the 7 months.

At St. Marc is one of the oldest factories in Quebec, having been established nearly thirty years ago, but it was receiving at one time nearly double the quantity of milk that is being sent at present. The soil is of the very best quality; and the chief crops raised at St. Marc, as well as in the whole county of Verchères, are hay and oats, hundreds of tons of hay being exported every year to the United States. However, all the farmers are keeping a certain number of cows; but with very few exceptions, they do not pay any particular attention to their dairies, being satisfied to get what they can out of the cows while at pasture, and feeding in the winter on straw and the poorer quality of hay that has not been exported.

Some farmers who used to grow corn and roots some years ago say they have given it up on account of the difficulty in getting help, and others expressed the opinion that it did not pay to try to produce milk in the winter.

The comparative yields of two herds in this association are full of interest. In the first herd 15 cows for the 6 months, June to November, gave an actual yield of 36,555 lb. milk, 1,450 lb. fat. The second herd consisted of only 8 cows, but gave almost as much, namely 35,966 lb. milk, 1,400 lb. fat. Both herds are managed by the same man, but are rented from two different owners. In the first case the owner limited the farmer to pasture for summer, and straw and poor hay for winter; in the second case the owner supplied everything necessary for fairly good feeding. The first herd wintered poorly and was in bad condition in spring. The second herd was wintered on hay, straw and oats cut green, with a ration of bran and other meal. In summer, besides pasture, they got soiling crops, and in the fall they had roots. This is one definite illustration of the necessity of abundant and suitable feed if cows are supposed to yield milk. Eight cows, fed, did the work of 15 that were just kept alive.

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LOTEINIÈRE, QUE., ASSOCIATION.

COMPARISON FOR 6 MONTHS, 1907.

Average Production of Herds.					Yield of Best Cow in each Herd.				Yield of Poorest Cow in each Herd.			
Herd.	Number of Cows in Herd.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A.....	8	3,526	4.2	148.0	9	3,870	4.7	181.3	9	2,850	4.7	134.1
B.....	7	3,838	4.0	152.8	7	5,007	4.0	200.8	6	2,874	4.0	115.3
C.....	10	3,797	4.1	155.0	6	4,270	4.2	181.7	5	3,410	3.9	133.4
D.....	6	3,964	4.7	186.0	13	4,182	3.8	159.7	6	4,080	3.3	135.2
E.....	3	4,423	4.6	206.0	9	4,855	4.5	219.0	6	3,940	4.5	179.1

Average of 34 cows for 6 months, 3,837 lb. milk, 4.1 test, 156.7 lb. fat.

During the 6 months that these 34 cows were recorded, the best cow in herd 'E' gave 1,018 lb. milk and 62.3 lb. fat above the average yield of the 34 cows; but during the same period the poorest cow in herd 'B,' a 6-year-old, gave 963 lb. milk and 41.4 lb. fat below the average of all the 34 cows, while actually falling 2,133 lb. milk and 85.5 lb. fat below the record of the best cow in the same herd with her. Most emphatically let it be repeated, there is urgent need of a careful study of each animal in the herd so that all, every single one, may be brought up to a reasonable standard of production.

COMPARISONS FOR 7 MONTHS, 1907.

Average Production of Herds.					Yield of Best Cow in each Herd.				Yield of Poorest Cow in each Herd.			
Herd.	Number of Cows in Herd.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A.....	5	2,768	4.1	114.9	13	3,350	4.2	139.9	15	2,340	4.0	92.9
B.....	8	4,080	3.8	156.3	.....	4,460	4.0	177.8	.....	3,990	3.5	141.3

Average of 13 cows for 7 months, 3,575 lb. milk, 3.9 test, 140.4 lb. fat.

ST. BARNABE, QUE., ASSOCIATION.

COMPARISON FOR 6 MONTHS, 1907.

Average Production of Herds.					Yield of Best Cow in each Herd.			Yield of Poorest Cow in each Herd.		
Herd.	Number of Cows in Herd.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.
		Lbs.		Lbs.	Lbs.		Lbs.	Lbs.		Lbs.
A.....	5	2,828	3.8	108.4	3,370	3.9	130.7	2,130	3.8	81.0
B.....	4	2,981	3.9	115.1	3,350	4.0	133.9	2,230	3.7	83.8
C.....	5	3,436	3.7	127.3	3,920	3.7	145.3	2,930	3.3	98.0

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The average production of 14 cows for 6 months was 3,088 lb. milk, 3.8 test, 117.7 lb. fat.

The average production of 2 cows for 7 months was 3,272 lb. milk, 4.1 test, 135.7 lb. fat.

HENRYVILLE, QUE., ASSOCIATION.

The average production of the 101 cows tested for 6 months was 3,278 lb. milk, 3.7 test, 123 lb. fat.

The poorest yield was 2,210 lb. milk, 3.5 test, 77.9 lb. fat from a 9-year-old cow, while the best yield was 5,015 lb. milk, 3.4 test, 171.8 lb. fat from a 4-year-old.

The average production of 23 cows for 7 months was 3,740 lb. milk, 3.8 test, 143.5 lb. fat.

ORMSTOWN, QUE., ASSOCIATION.

Thirty-five cows were recorded for 6 months, the average yield being 3,953 lb. milk, 3.7 test, 147 lb. fat.

The production of the best cows in five different herds for six months is given below in tabular form, showing a difference in earning power in six months of \$16.89, between the best cow in herd A and the best cow in herd E.

TOTAL PRODUCTION, 6 MONTHS, OF THE BEST INDIVIDUAL COWS IN FIVE DIFFERENT HERDS.

Herd	Breed of Cow.	Date of Calving.	Age.	Milk.	Test.	Fat.	Value of Fat at 25c. per pound.
				Lbs.		Lbs.	\$ cts.
A	Grade Ayrshire.....	April 14..	8	3,685	3.6	132.3	33 07
B	".....	May 5..	9	4,655	3.8	175.4	43 85
C	Grade Holstein.....	3..	9	5,100	3.6	183.0	45 75
D	Grade Ayrshire.....	April 15..	9	4,945	3.9	191.5	47 87
E	Grade.....	May 3..	9	5,384	3.7	199.8	49 96

The *best herd* record for 6 months is that of a herd of 6 cows giving an average yield of 3,934 lb. milk, 4.1 test, 160.6 lb. fat.

In that herd the highest yield was 5,384 lb. milk, 3.7 test, 199.8 lb. fat, from a 9-year-old calved May 3, and the lowest yield was 4,087 lb. milk, 4.2 test, 173.0 lb. fat from an eight-year-old calved May 9.

The *poorest herd* record for 6 months is that of a herd of 5 cows with an average yield of 3,202 lb. milk, 3.6 test, 114 lb. fat. In this herd the highest yield was 3,685 lb. milk, 3.6 test, 132.0 lb. fat from an 8-year-old, calved April 14, and the lowest yield was 2,585 lb. milk, 3.5 test, 91.5 lb. fat, from a 5-year-old calved May 12.

These contrasts between the averages of the best and poorest herds, including as they do the highest and lowest yields of any cow in the association, tested for six months, are rendered all the more striking when it is noted that no farrow cows are included, nor any cow under 5 years old. Reduced to a cash basis, it means that one cow in six months brings in over *twenty-seven dollars more* than another. There is certainly an opportunity for selection.

The average yield of 6 cows for 7 months was 6,085 lb. milk, 3.3 test 199.0 lb. fat.

BAGOTVILLE (ST. ALPHONSE), QUE., ASSOCIATION.

The average production of 9 cows for 6 months was 3,738 lb. milk, 4.1 test, 152.7 lb. fat.

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The average production of 81 cows for 7 months was 4,096 lb. milk, 4.2 test, 164.7 lb. fat.

The lowest yield of any one cow was 2,800 lb. milk, 3.6 test, 100 lb. fat; but the highest yield was 5,320 lb. milk, 4.4 test, 232.9 lb. fat. Why keep two cows to do the work of one?

ST. PRIME, QUE., ASSOCIATION.

The average production of 20 cows for 6 months was 3,119 lb. milk, 4.2 test, 132.8 lb. fat.

ST. JEROME, QUE., ASSOCIATION.

Fifteen cows averaged for 6 months, 2,858 lb. milk, 4.2 test, 119.7 lb. fat.

Twenty-four cows in 7 months averaged 3,177 lb. milk, 3.9 test, 123.4 lb. fat. In one herd a cow with 4,650 lb. milk produced 19 lb. fat less than another cow with 3,550 lb. milk.

ST. DOMINIQUE (JONQUIÈRES), QUE., ASSOCIATION.

Fifty-two cows averaged for 6 months 2,716 lb. milk, 4.6 test, 116.6 lb. fat.

If these 52 cows had averaged as well as the 20 recorded in the St. Prime association they would have given 30,940 lb. milk more than they actually did in the six months.

Thirty cows averaged in 7 months 3,090 lb. milk, 4.2 test, 129.1 lb. fat.

If these 30 cows had yielded as much milk and butter fat on the average as did the 81 cows recorded in the Bagotville association they would have given 30,180 lb. milk and 1,068.0 lb. fat more than they actually did yield in seven months.

One herd is lagging a long way behind, as the 13 cows had an average yield of 2,585 lb. milk, 4.1 test, 107.0 lb. fat. A herd of 11 cows in the same neighbourhood gave, on the average, 3,589 lb. milk, 4.2 test, 150.1 lb. fat, or over 1,000 lb. milk more in the 7 months. One cow out of the 11 gave 5,295 lb. milk, 4.3 test, 231.9 lb. fat.

CHICOUTIMI, QUE., ASSOCIATION.

The average production of 9 cows for 6 months was 3,153 lb. milk, 4.1 test, 131.1 lb. fat.

Thirty cows tested 7 months averaged 3,512 lb. milk, 4.1 test, 144.2 lb. fat.

The average production of 52 cows for 8 months was 3,900 lb. milk, 4.0 test, 158.8 lb. fat.

Herd 'D' has the commendable average from 23 cows of 4,662 lb. milk, 4.1 test, 194.0 lb. fat, though only slightly better than the 3 best herds in the Bagotville association recorded for only 7 months instead of 8.

The 4 remaining associations of this group in the district of Chicoutimi and Lake St. John, namely Normandin, St. Felicien, St. Charles (La Décharge) and St. Ambroise (Rivière à l'Ours), had no records for a long enough period from which to make deductions.

COATICOOK, QUE., ASSOCIATION.
COMPARISONS FOR 6 MONTHS, 1907.

Average Production of Herds.					Yield of Best Cow in each Herd.				Yield of Poorest Cow in each Herd.			
Herd.	Number of Cows in Herd.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A.....	6	2,832	3.7	107.6	5	3,530	3.9	139.6	5	2,205	3.8	84.0
B.....	3	2,897	3.9	111.8	5	2,875	4.1	117.7	3	2,705	3.9	104.7
C.....	6	3,067	3.9	121.3	5	3,870	3.9	152.1	5	2,675	4.3	114.0
D.....	5	3,153	4.1	129.0	9	3,610	4.2	151.9	10	3,110	3.8	117.4
E.....	4	3,245	4.4	143.2	10	4,065	4.3	177.8	10	3,229	4.2	136.9

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The average production of 25 cows for 6 months was 3,216 lb. milk, 128.2 lb. fat; average test 4.0 per cent fat.

Three out of the 5 herds compared did not measure up to the average yield of the 25 cows. As is frequently the case, the general average is greatly helped by one or two good cows. Hence, note the good yield of the 10-year-old cow in herd 'E,' 975 lb. milk and 54.6 lb. fat above the average.

This table indicates the difference in production among herds in the same locality. The average of herd 'E' was 35.6 lb. of fat better than that of herd 'A.' The more important difference to note is that in herd 'A' the poorest cow, 5 years old, not a heifer or a farrow cow, gave 55.6 lb. of fat less than the best cow in that herd during 6 months. This shows the need of studying each individual in the herd to make sure of profit from each.

COATICOOK, QUE., ASSOCIATION.
COMPARISONS FOR 7 MONTHS, 1907.

Average production of Herds.					Yield of Best Cow in each Herd.				Yield of Poorest Cow in each Herd.			
Herd.	Number of Cows in Herd.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A.....	9	3,385	3.6	123.5	7	4,305	4.3	161.2	9	2,155	4.2	90.5
B.....	12	3,924	4.1	161.7	5	4,600	5.1	235.2	7	3,155	3.7	117.6
C.....	8	4,147	4.1	176.8	10	4,682	4.2	196.4	10	3,860	4.1	159.6

The average yield of 29 cows for 7 months was 3,984 lb. milk, 159.3 lb. fat; average test 4.0 per cent fat.

The best cow in herd 'B' gave 800 lb. milk and 81.2 lb. fat more than the average yield of all the 29 cows compared, and out-distanced the 9-year-old cow in herd 'A' by 2,445 lb. milk and 144.7 lb. fat in the 7 months' race.

Such differences should make every dairy farmer inquire into the capacity of every single cow he owns. With milk at \$1 per 100 lb. during 1907, the one cow earned \$24.45 more than the other, during just 7 months.

STE. EMELIE, QUE., ASSOCIATION.

The average yield of 74 cows for 6 months was 2,985 lb. milk, 4.2 test, 125.5 lb. fat. Seven cows in one herd averaged only 2,537 lb. milk, 3.9 test, 100.0 lb. fat. In that herd the poorest yield was 2,410 lb. milk, 3.9 test, 94.0 lb. fat from a 5-year-old.

COMPARISONS FOR 7 MONTHS, 1907.

AVERAGE PRODUCTION OF HERDS.					YIELD OF BEST COW IN EACH HERD.				YIELD OF POOREST COW IN EACH HERD.			
Herd.	No. of Cows in Herd.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A.....	8	2,849	4.1	117.0	4	3,220	4.1	132.0	4	2,540	3.8	98.0
B.....	5	3,124	4.4	137.0	12	4,179	4.1	175.0	5	3,000	4.3	130.0
C.....	7	3,332	4.3	142.0	13	4,660	4.3	196.0	11	3,505	4.1	145.8

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The average production of 20 cows for 7 months was 3,073 lb. milk, 4.2 test, 130.7 lb. fat.

In the foregoing table the yield of young stock, 2 and 3-year-olds, has not been given as the 'yield of the poorest cow in each herd,' their low records pull down the average production; but leaving them out, the record of the mature cow with low production is rendered the more unenviable.

MANSONVILLE, QUE., ASSOCIATION.

Out of 110 cows recorded by the members of this association 17 ran for 7 months, 6 for 6 months, 17 for 5 months, and the remainder for less than 5 months.

It would almost appear from this that the real advantages and objects of weighing and sampling are not appreciated. A spasmodic rush to the spring balance will not reveal a cow's capacity of production. The total yield during the full period of lactation must be known before any man can gauge the possibilities of the individual cow. Similar testing associations, wherever inaugurated, invariably have shown that the best records, whether of herds or individuals, are found where there is persistent, not abortive, effort.

Six cows tested for 6 months averaged 3,375 lb. milk, 4.2 test, 142.4 lb. fat.

Sixteen cows in two herds tested for 7 months averaged 4,281 lb. milk, 4.1 test, 176.9 lb. fat.

The average value of production of 9 cows in one herd was \$44.50, while the other 8 cows gave \$43.25. Is this a pretty even lot? No, for on taking the 9 cows, it is found that the best record was from a 3-year-old that gave 4,850 lb. milk, 4.4 test, 213.9 lb. fat, value \$53.47; while the poorest record in that herd was from another 3-year-old that gave 3,320 lb. milk, 4.7 test, 154.9 lb. fat, value \$38.72. That is to say, far from being an even lot, there was a difference between these two cows in the same herd, of 1,530 lb. milk, 59 lb. fat, value \$14.75. When one cow is found to be earning \$2.10 every month more than another, it is evidently to the interest of every dairy farmer to determine for himself which are the profitable cows, and which are not.

DIXVILLE, QUE., ASSOCIATION.

COMPARISONS FOR 6 MONTHS, 1907.

AVERAGE PRODUCTION OF HERDS.					YIELD OF BEST COW IN EACH HERD.				YIELD OF POOREST COW IN EACH HERD.			
Herd.	No. of Cows in Herd.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A.....	4	2,474	3.9	96.2	8	2,960	3.8	113.1	2	2,330	3.8	87.8
B.....	10	2,426	4.0	96.3	9	3,110	4.2	130.0	5	2,585	3.8	98.1
C.....	5	2,911	3.4	99.2	9	3,125	3.5	110.0	4	2,575	3.6	94.1
D.....	4	3,039	4.3	130.6	7	3,640	4.0	146.0	5	5,435	3.8	130.9
E.....	6	2,909	4.7	137.3	6	3,262	5.3	172.0	7	2,630	4.6	122.5

The average yield of 37 cows for 6 months was 2,778 lb. milk, 4.0 test, 111.3 lb. fat.

COMPARISONS FOR 7 MONTHS, 1907.

AVERAGE PRODUCTION OF HERDS.					YIELD OF BEST COW IN EACH HERD.				YIELD OF POOREST COW IN EACH HERD.			
Herd.	No. of Cows in Herd.	Milk.	Test.	Fat.	Age.	Milk	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A.....	8	3,568	4.0	142.1	6	4,365	4.0	172.0	4	3,370	3.5	117.0
B.....	5	3,520	4.3	150.1	7	4,775	4.6	217.8	6	2,955	4.7	139.6

The average yield of 26 cows for 7 months was 3,470 lb. milk, 4.0 test, 136.8 lb. fat.

COMPARISONS FOR 8 MONTHS, 1907.

AVERAGE PRODUCTION OF HERDS.					YIELD OF BEST COW IN EACH HERD.				YIELD OF POOREST COW IN EACH HERD.			
Herd.	No. of Cows in Herd.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A.....	5	3,340	3.7	125.0	8	4,220	3.7	156.2	12	2,945	3.6	105.9
B.....	4	3,267	4.0	129.6	8	3,690	3.9	144.8	4	2,540	4.2	105.3
C.....	6	4,046	3.8	155.0	12	5,105	3.6	183.9	10	3,005	4.5	136.7
D.....	6	4,047	3.9	156.6	9	5,065	3.7	185.9	5	3,820	3.8	145.9
E.....	5	4,066	4.3	173.8	8	4,570	4.3	196.8	5	3,165	4.2	134.0
F.....	4	5,195	3.5	181.3	6	6,015	3.5	210.3	7	4,796	3.5	167.2

The average yield of 40 cows for 8 months was 4,024 lb. milk, 154.5 lb. fat, average test 3.8 per cent fat.

In these 6 herds the difference between the best and poorest yield of milk varied from 1,150 lb. to 2,100 lb. between two animals in the same herd during 8 months. Surely this thrusts home the necessity of definite knowledge as to the performance of each cow in the herd.

COMPARISONS FOR 9 MONTHS, 1907.

AVERAGE PRODUCTION OF HERDS.					YIELD OF BEST COW IN EACH HERD.				YIELD OF POOREST COW IN EACH HERD.			
Herd.	No. of Cows in Herd.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A.....	4	4,669	3.5	164.6	4	4,547	4.0	182.6	12	4,640	3.4	153.3
B.....	5	4,980	3.6	178.5	7	5,420	3.7	201.6	10	4,365	3.6	155.9

The average yield of 15 cows for 9 months was 4,802 lb. milk, 3.7 test, 178.3 lb. fat.

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HATLEY, QUE., ASSOCIATION.

Average yield of cows tested for 6 months, 1907, 13 cows, 2,782 lb. milk, 3.9 test, 110.2 lb. fat.

COMPARISONS FOR 7 MONTHS. 1907.

AVERAGE PRODUCTION OF HERDS.					YIELD OF BEST COW IN EACH HERD.				YIELD OF POOREST COW IN EACH HERD.			
Herd.	No. of Cows in Herd.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A.	15	2,805	4.0	111.3	8	5,195	3.4	177.1	5	2,120	4.6	98.8
B.	4	2,915	4.0	115.7	6	3,130	4.4	138.8	3	1,805	4.3	77.4
C.	8	3,374	3.6	122.6	5	4,425	3.5	153.9	5	2,755	3.8	104.1
D.	6	3,322	4.5	148.3	7	4,455	3.9	175.7	5	2,675	5.2	138.3
E.	4	4,126	3.8	158.6	11	4,740	4.1	193.0	4	2,940	3.4	99.0
F.	4	4,433	4.2	188.1	8	5,460	3.9	214.4	9	3,955	3.9	155.3

The average yield of 47 cows for 7 months was 3,291 lb. milk and 130.7 lb. fat, average test, 4.0 per cent fat.

The 5-year-old cow in herd 'A' gave 3,340 lb. milk and 117.6 lb. fat less than the 8-year-old cow in herd 'F'; and all the 15 cows in herd 'A' averaged 1,628 lb. milk and 76.8 lb. fat less than the average of herd 'F.' Had they averaged as well, the owner of herd 'A,' with milk at \$1 per 100 lb. would have received in 7 months an additional income of \$244.20. Such comparisons should sound the death knell of many poor individual cows, and ring in the day of systematic improvement.

COMPARISONS FOR 8 MONTHS, 1907.

AVERAGE PRODUCTION OF HERDS.					YIELD OF BEST COW IN EACH HERD.				YIELD OF POOREST COW IN EACH HERD.			
Herd.	No. of Cows in Herd.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.
		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.		Lbs.
A.	5	3,778	3.7	140.4	6	4,385	3.5	155.0	10	3,930	2.9	115.6
B.	4	3,727	4.0	148.8	7	4,902	3.9	191.3	4	2,752	3.8	105.4
C.	4	4,690	4.1	192.5	8	5,005	4.7	238.0	12	3,840	3.4	131.0

The average yield of 19 cows for 8 months was 4,094 lb. milk and 162.5 lb. fat. Average test 4.0.

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COMPARISONS FOR 9 MONTHS, 1907.—AVERAGE PRODUCTION OF HERDS.

Herd.	No. of Cows in Herd	Milk.	Average Test.	Fat.
		Lbs.		Lbs.
1.....	4	3,822	3·8	146·8
2.....	4	4,251	4·1	176·4
3.....	4	4,438	4·1	182·9

The average yield of 13 cows for 9 months was 4,186 lb. milk, 4·0 test, 167·4 lb. fat.

ST. ARMAND, QUE., ASSOCIATION.

Six herds, 113 cows, were tested for 12 months in this association.

During this period, 6 of these cows were dry for 5 months, 20 for 4 months, 35 for 3 months, 36 for 2 months, 8 for 1 month and 8 cows were milked during the whole 12 months. Manifestly the milking period is far too short in very many instances.

The average production of these 113 cows for the whole 12 months was 4,375 lb. milk, 4·1 test, 180·4 lb. fat. The best individual yield was 9,265 lb. milk, 3·9 test, 367·2 lb. fat; and the lowest yield was 2,905 lb. milk, 4·3 test, 124·4 lb. fat.

AVERAGE PRODUCTION OF SIX HERDS FOR TWELVE MONTHS.

Herd.	Number of Cows.	Total Milk.	Average Test.	Total Fat.	Value. of Production at 25c. per pound of Fat.
		Lbs.		Lbs.	\$ cts.
A.....	22	3,429	4·7	161·4	40 35
B.....	27	3,754	4·2	168·8	42 20
C.....	20	4,382	3·9	171·6	42 90
D.....	7	4,687	4·0	186·5	46 62
E.....	22	5,136	3·7	190·3	47 57
F.....	15	5,614	4·0	223·4	53 85

This indicates a difference in the average production of \$15.50 per cow between the best and poorest herds. Thus, if the 22 cows in herd 'A' were as good as the average of herd 'F' they would have earned \$341 more.

PRODUCTION OF THE BEST COW IN EACH OF THESE SIX HERDS.

Herd.	Milk.	Average Test.	Fat.	Value at 25c. per lb. of Fat.	Age.	Breed.
	Lbs.		Lbs.	\$ cts.		
F.....	9,265	3·9	367·2	91 80	8	Ayrshire.
E.....	6,645	4·4	297·2	74 30	12	Grade.
B.....	6,165	4·1	254·8	63 70	8	Guernsey.
C.....	5,430	4·3	234·9	58 72	5	Grade Ayrshire.
A.....	4,810	4·8	234·7	58 67	7	Grade Jersey.
D.....	5,729	4·0	233·0	58 25	7	Grade Ayrshire

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Whereas in herd 'F' the 8-year-old produced \$91.80 worth of butter fat, in herd 'D' the 7-year-old, again the best cow in that herd be it noted, produced \$33.55 worth of butter fat less, or only \$58.25 worth.

PRODUCTION OF THE POOREST COW IN EACH OF THE SAME SIX HERDS.

Herd.	Milk.	Average Test.	Fat.	Value at 25c. per lb. of Fat.	Age.	Breed.
	Lbs.		Lbs.	\$ cts.		
F.....	6,232	3.3	205.9	51 42	6	Ayrshire.
D.....	4,431	4.0	179.3	44 82	5	Grade.
C.....	3,837	4.0	153.8	38 45	8	Grade Ayrshire.
E.....	3,680	3.5	128.8	32 20	8	Grade.
B.....	3,535	3.6	128.3	32 07	14	Grade Guernsey.
A.....	2,905	4.3	124.4	31 10	5	Grade.

There is a difference of \$20.37 between the value of the yields of the poorest cow in herd 'F' and the poorest cow in herd 'A.'

In these six herds the average difference in the value of production between the best and poorest cow in the same herd is \$29.20. There is evidently much yet to be done in getting every cow up to a profitable level, even in these good herds.

NOTE.—None but the yields of cows 5 years old, or over, were taken in making the above comparisons.

Some striking instances of the necessity of testing in order to determine the value of a cow as a butter producer, appear in the records of some herds in this association.

Herd No. 8.	Milk.	Average Test.	Fat.
	Lbs.		Lbs.
Cow A.....	4,175	5.4	227
Cow B.....	4,370	3.7	164

Thus cow 'B' gave 195 lb. milk more than cow 'A,' but produced 63 lb. fat less.

Herd No. 10.	Milk.	Average Test.	Fat.
	Lbs.		Lbs.
Cow A.....	6,435	3.5	225.7
Cow B.....	5,302	4.1	221.2
Cow C.....	4,370	4.6	200.2
Cow D.....	5,830	3.6	208.7

Cow 'A' gave 1,132 lb. more milk but only 4.5 lb. more fat than cow 'B.'
Cow 'D' produced 1,460 lb. more milk, but only 8.5 lb. more fat than cow 'C.'

Herd No. 15.	Milk.	Average Test.	Fat.
	Lbs.		Lbs.
Cow A.....	6,230	3.8	206.0
Cow B.....	5,200	4.2	220.0

In this herd cow 'B,' with 1,030 lb. milk less than cow 'A' produced 14 lb. fat more.

In going over the records of each herd, the usefulness of keeping records as a guide in making intelligent selection, as well as breeding after correct principles, is abundantly demonstrated.

Herd No. 1 averaged 3,427 lb. milk and 161.4 lb. fat. Out of the 22 cows that compose this herd, ten were below the average of 161 lb. fat, eight of them only yielded an average of 2,510 lb. milk and 118.9 lb. fat; there were only two three-year-old heifers among these eight cows, the balance being from 5 to 12 years old. The difference between the best and poorest cow in this herd was 1,905 lb. milk and 110.3 lb. fat, value \$27.27.

In herd No. 8 the average production was 3,754 lb. milk, 168.8 lb. fat. The difference between the best and poorest cow was 2,630 lb. milk and 126.5 lb. fat; age of poorest cow, 14 years. Out of the 27 cows, 14 were below the average for the herd; only five were heifers, two or three years old; the balance were all mature cows. The best cow was milked ten months, and the poorest only eight months during the year.

In herd No. 10 the difference between the best and poorest cow was 2,765 lb. milk and 168.4 lb. fat, valued at \$42.10.

In herd No. 15, six of the 15 cows which compose this herd were two and three-year-old heifers. The average production for the whole herd was 223.4 lb. fat, and the average for just the six heifers reached the respectable figure of 184.6 lb. fat each.

One illustration of 'weeding out.' In one herd of 22 cows in this association the total value of production at an average of 3,429 lb. milk and 161.4 lb fat per cow, stood at \$888.08. Allowing \$35 as the average cost of feed, the profit was \$118.08. Suppose now, that the poorest eight cows, that averaged only 2,510 lb. milk, 118.9 lb. fat, had been disposed of, leaving only fourteen in the herd, the proposition would have thus resolved itself:—

The same herd, less 8 cull cows—	
Total value of production.. . . .	\$619 50
Cost of feed, 14 cows at \$35.....	490 00
Profit.....	\$129 50

This means that all the labour attendant on the care of 8 cows for one year could have been saved, that \$280 worth of feed would have been on hand and that the profit even then would have been eleven dollars more. In these days of scarcity of efficient help on the farm this should appeal to every owner of a herd. In this particular case the 8 cows were all of mature age, and the 14 proposed to be left included 3 heifers, capable of development, but which stood below the average yield. These figures are commended to the earnest thought, and application, of all dairy farmers.

ST. EDWIDGE, QUE., ASSOCIATION.

Thirty-three cows in 7 different herds were tested for 6 months with an average yield of 3,494 lb. milk, 3.8 test, 133 lb. fat.

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Valuing fat at 25 cents per lb., the return per herd varied from \$23.38 to \$46.98. This is another illustration of two cows being kept to do the work that should be done, and is done, by one cow.

Fifty-seven cows in 11 herds were recorded for 7 months, and gave an average of 3,680 lb. milk at 3.9 test, 143.4 lb. fat.

Taking butter fat again at 25 cents per lb., 3 cows composing one herd returned \$50.70 each from 202.8 lb. fat, while 4 cows in an adjoining herd gave only \$26.53 each from 106.3 lb. fat in the same time. This was a difference of \$24.12, or \$3.44 per month. Are there not hundreds more of such herds and individual cows that should be giving over \$3 a month more?

Twenty-seven cows were tested for 8 months, the individual yields running from 2,090 lb. milk, 4.7 test, 99.4 lb. fat, up to 6,320 lb. milk, 3.7 test, 235.8 lb. fat.

Four cows tested 10 months averaged 4,889 lb. milk, 3.8 test, 187.7 lb. fat.

Twenty cows in 3 herds were tested for the entire 12 months with an average yield of 4,496 lb. milk, 3.9 test, 176.4 lb. fat. Detailed comparisons are given below.

AVERAGE PRODUCTION OF THREE HERDS, TWELVE MONTHS.

Herd No.	Number of Cows.	Milk.	Average Test.	Fat.	Value at 25c. per lb.
		Lbs.		Lbs.	\$ cts.
16.....	10	5,058	3.9	195.6	48 90
18.....	4	3,074	4.0	122.8	30 70
32.....	6	4,508	4.0	180.4	45 10

PRODUCTION OF BEST COW IN EACH HERD.

Herd No.	Age of Cow.	Milk.	Average Test.	Fat.	Value at 25c. per lb.
		Lbs.		Lbs.	\$ cts.
16.....	3	6,370	3.7	240.0	60 00
18.....	10	3,950	3.7	148.0	37 00
32.....	13	5,605	4.3	244.5	61 12

PRODUCTION OF POOREST COW IN EACH HERD.

Herd No.	Age of Cow.	Milk.	Average Test.	Fat.	Value at 25c. per lb.
		Lbs.		Lbs.	\$ cts.
16.....	3	3,828	3.7	141.0	35 25
18.....	5	2,294	4.4	102.5	25 63
32.....	13	4,660	3.6	167.2	41 80

From the above tables it will be seen that the cows in herd 16 gave almost 2,000 lb. of milk per cow more for all of the 10 cows than did the 4 cows in herd 18.

In herd 32 the best cow gave 945 lb. milk and 77.3 lb. fat more than the poorest cow, or a difference in cash value of \$19.32. Both of these two cows were 13 years old. Questions of age, breed, conformation to type, may all well be sunk in the more pertinent inquiry as to actual performance. Ability to produce has to be secured.

COWANSVILLE, QUE., ASSOCIATION.

Twenty-four cows tested for 6 months averaged 2,961 lb. milk, 3.9 test, 115 lb. fat. The best cow in one herd gave 3,630 lb. milk, 4.1 test, 150.0 lb. fat, which valued

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at 25 cents per lb. equals \$37.50. The poorest cow in the same herd, a 5-year-old, calved in April, gave only 1,850 lb. milk, 5.0 test, 92.0 lb. fat, which at the same valuation equals \$23, or \$14.50 less return than the other cow in 6 months.

Nineteen cows were tested for 7 months and averaged 3,689 lb. milk, 3.9 test, 144.8 lb. fat. Again taking fat at 25 cents per lb., the best cow in one herd earned \$15.70 more than the poorest in the 7 months.

Twenty-eight cows tested for 8 months averaged 4,591 lb. milk, 4.0 test, 185.9 lb. fat. One herd averaged 4,706 lb. milk, 4.0 test, 189.1 lb. fat. The highest yield of any one cow was 6,300 lb. milk, 3.9 test, 247 lb. fat, age 9, calved February 1st. The lowest yield was 3,530 lb. milk, 4.4 test, 154 lb. fat, age 4, calved March, or a difference of 2,770 lb. milk and 93 lb. fat in 8 months.

Fifteen cows were tested 9 months, and averaged 4,281 lb. milk, 4.3 test, 183.5 lb. fat.

The poorest herd averaged 2,782 lb. milk, 3.9 test, 109 lb. fat, while the best herd averaged 5,332 lb. milk, 4.1 test, 220.4 lb. fat. Valuing fat at 25 cents per lb., the one herd earned \$34.25 per cow, while the other herd returned \$62.75 per cow in the same period. Such differences indicate the imperative necessity of determining the production of each cow. There is no surer method than systematic weighing and testing.

Fourteen cows tested 10 months averaged 5,395 lb. milk, 4.7 test, 254.6 lb. fat. In the herd with the poorest average of 2,778 lb. milk, 4.0 test, 112.2 lb. fat, the best yield of any one cow was 3,480 lb. milk, 4.0 test, 141.3 lb. fat. A happy contrast to this, the best herd of 8 cows averaged 6,491 lb. milk, 4.8 test, 313.6 lb. fat, or practically three times as much, and the best cow in this herd gave 8,845 lb. milk, 4.8 test, 424.6 lb. fat, virtually four times as much fat as the best cow in the first mentioned herd. Is it not time, high time, for improvement?

For the full 12 months 34 cows in three herds gave an average yield of 5,620 lb. milk, 4.7 test, 264 lb. fat.

The old saying that 'extremes meet' is once more exemplified here. To illustrate: the best herd, one of 20 cows, included in this lot of 34, had an average yield of 6,593 lb. milk, 4.8 test, 319.8 lb. fat; but the neighbouring and the poorest herd, one of 7 cows, gave only 2,780 lb. milk, 4.0 test, 111 lb. fat, practically only one-third as much.

As a further contrast, the best individual record in each of the three herds should be noticed.

YIELD OF THE BEST COW IN THREE HERDS, TWELVE MONTHS.

Herd.	Milk.	Average Test.	Fat.	Value at 25c. per lb. of Fat.
	Lbs.		Lbs.	\$ cts.
A.....	9,545	4.7	450.8	112 70
B.....	7,100	4.3	303.6	75 90
C.....	3,480	4.2	141.3	35 32

The highly satisfactory totals credited to the best cow in herd 'A,' and to the herd of 20 cows, as noted above, are a magnificent tribute to the brains, pluck and perseverance of this herd's owner. These results illustrate in tangible form how a man is rewarded for liberal feeding, wise selection of good grades through the medium of the scales and the Babcock test, and the use of a good dairy sire.

Last year's feed averaged \$45 per cow in this herd, but the return from the best cow was \$112.70, or 60 per cent on the investment. Calculating feed at any reasonable price, what was the return on the investment in the best cow of herd 'C'?

REPORT
OF THE
DAIRY AND COLD STORAGE COMMISSIONER
FOR THE
FISCAL YEAR ENDING MARCH 31
1908

**PART II.—REPORT OF THE ASSISTANT DAIRY
COMMISSIONER.**

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*Summary of Work—Visits and Lectures—Provincial Conventions—Fruit Tree
Survey—St. Hyacinthe Dairy School—Inspection of Factory Syndicates.*

PART II.—REPORT OF THE ASSISTANT DAIRY COMMISSIONER.

ST. DENIS (EN BAS), COUNTY OF KAMOURASKA, P.Q., March 31, 1908.

Mr. J. A. RUDDICK,
Dairy and Cold Storage Commissioner,
Ottawa.

SIR,—I beg leave to present you my eighteenth report as Assistant Dairy Commissioner, which covers a period of twelve months beginning April 1, 1907, and ending on this date.

SUMMARY OF MY WORK.

During the last twelve months I have devoted all my time to the province of Quebec, and have made, in all, 139 visits to 86 localities in 31 counties. I have delivered 237 lectures before 13,532 persons, 445 of whom were cheese or butter makers. Exclusive of the lectures delivered before the students of the provincial dairy school at St. Hyacinthe, Que., the average attendance at those lectures was 62 persons. Of the 86 localities I visited 25 for the first time in my capacity as Assistant Dairy Commissioner. In performing my work I have travelled 5,858 miles.

The following is a list of the counties and localities in which I have delivered lectures, with reference letters indicating the purpose of the meetings.

TABLE OF VISITS AND LECTURES.
PROVINCE OF QUEBEC.

Counties.	Localities.	Visits.	Lectures.	Reference Letters.
Beauce.....	Sacré Cœur de Jesus.....	1	1	c
	St. Elzéar.....	1	1	c
	St. Frédéric.....	1	1	c
	St. Joseph.....	1	2	h
	St. Séverin.....	1	1	c
	Ste. Marie.....	3	5	c, h
Berthier.....	Saints Anges.....	4	8	h
	Berthierville.....	1	1	b
Charlevoix.....	Malbaie.....	1	2	b, d
Compton.....	Chesham.....	1	1	c
	Emberton.....	1	1	c
	La Patrie.....	1	1	c
	Megantic.....	1	1	c
	Piopolis.....	1	1	c
	St. Léon.....	2	1	c, h
	Scotstown.....	1	1	c
	Cranbourne.....	3	6	h
	Frampton.....	7	14	h
	".....		2	f
Dorchester.....	".....	1	1	b
	St. Léon de Stanton...	5	10	h
	St. Malachie.....	4	8	h
	".....		2	f
	Ste. Claire.....	1	2	h
	Ste. Germaine.....	1	2	h
	Ste. Marguerite.....	1	2	h
	Ste. Anne de Bellevue...	1	2	a, f
	St. Ambroise.....	1	1	b
	St. Paul.....	1	1	b
Kamouraska.....	Ste. Elizabeth.....	1	1	b
	St. Denis.....	1	1	c

Counties.	Localities.	Visits.	Lectures.	Reference Letters.
Lake St. John.....	Roberval	1	1	b, g
	"	1		h
L'Assomption.....	L'Assomption.....	1	1	b
	L'Epiphanie.....	1	1	b
Lévis.....	St. Nicolas.....	1	1	c
L'Islet.....	St. Jean Port Joli.....	1	3	a, b
	Village des Aulnaies.....	1		a
Lotbiniere.....	St. Jean des Chaillons.....	1	1	c
	Ste. Philomene.....	1	1	c
Maskinongé.....	Louisville.....	3	6	h
	"	1	1	b
	Maskinongé.....	4	8	h
	St. Alexis.....	2	4	h
	St. Justin.....	2	4	h
	St. Léon.....	6	12	h
	St. Paulin.....	3	6	h
	Ste. Ursule.....	3	6	h
Matane.....	Amqui.....	2	1	d, h
Mégantic....	St. Cœur de Marie.....	2	2	c, h
Montcalm.....	St. Alexis.....	1	1	b
	St. Esprit.....	1	1	b
	St. Jacques.....	1	2	b
	Ste. Julienne.....	1	2	b
	Ste. Marie Salomé.....	1	1	b
Montmagny.....	Berthier.....	1	1	c
Nicolet.....	Gentilly.....	2	1	c, h
Richelieu.....	St. Joseph de Sorel.....	1	1	d
	Ste. Anne de Sorel.....	3	1	c, h
Richmond.....	Bromptonville.....	1	1	c
	St. Claude.....	1	1	d
	St. Francois-Xavier de Brompton.....	1	1	c
	Stoke Centre.....	1	1	c
	Windsor Mills.....	1	1	c
Rimouski.....	St. Mathieu.....	1	2	h
	St. Simon.....	1	2	h
Rouville.....	Marieville.....	1	2	b
	St. Césaire.....	1	2	b
St. Hyacinthe.....	St. Hyacinthe.....	2	20	a, e
	" Inspectors.....	1	1	a, e
	"		1	a, e, f
St. John.....	Lacolle.....	2	1	d, h
St. Maurice.....	Yamachiche.....	1	2	h
Sherbrooke.....	St. Elie d'Orford.....	1	1	c
Stanstead.....	Stanstead.....	1	1	b, g
Témiscouata.....	Cacouna.....	1	2	h
	Isle Verte.....	2	4	h
	Riviere du Loup.....	1	2	h
	St. Antoine.....	1	2	h
	St. Arsene.....	1	2	h
	St. Clement.....	1	2	h
	St. Cyprien.....	2	4	h
	St. Eloi.....		2	h
	St. Epiphane.....	1	2	h
	St. Hubert.....	1	2	h
	St. Jean de Dieu.....	2	4	h
	St. Paul de la Croix.....	2	2	h
	Trois Pistoles.....	2	4	h
Three Rivers.....	Three Rivers.....	2	2	a, h
	"	1	2	a
Two Mountains.....	St. Eustache.....	1	2	b
	St. Scholastique.....	1	2	b

Reference letters indicate:—(a) Provincial conventions; (b) county and district conventions; (c) farmers' club meetings; (d) parish meetings; (e) St. Hyacinthe Dairy School; (f) English lectures; (g) visits to schools; (h) factory inspections and lectures.

The foregoing table shows that I have delivered (a) nine lectures at provincial conventions, not including the provincial courses at the St. Hyacinthe Dairy School; (b) twenty-eight at county and district conventions; (c) twenty-six at farmers' club meetings; (d) five at parish meetings; (e) twenty-two to the students at the St. Hyacinthe Dairy School; (f) seven in English; (g) two in schools of domestic science, and that I have made eighty-two factory inspections, in the course of which I have delivered 152 lectures to the factory patrons.

PROVINCIAL CONVENTIONS.

The first of the provincial conventions I attended during the last twelve months was the annual spring meeting of the Province of Quebec Syndicate Inspectors, held

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at the St. Hyacinthe Dairy School on April 24th. There were 70 inspectors present. I delivered two lectures to them, one in French and one in English, on the necessity for them to qualify as instructors as well as inspectors and to fit themselves for delivering lectures before the patrons of the factories which are under their control. Dairy farming, cattle raising, care and feeding, the care of milk, milk testing, &c., are so many subjects with which they should make themselves familiar so as to teach them to the patrons. My address on that topic included a programme of the lectures they should prepare themselves to deliver. This would enable our federal and local departments of agriculture to utilize their services as lecturers at farmers' institutes and club meetings, in winter time, when their work as inspectors is not required. A few of them are at present doing useful work in that line.

The second provincial convention I attended was the annual meeting of the Agricultural Missionaries of the Province of Quebec, held at Three Rivers on July 16 and 17, in the college buildings. I prepared and delivered at that convention a lecture on 'Theory vs. Practice in Agriculture,' of which the following is a short summary:—

Theory is the exposition of principles governing an art or a science; practice is the application of these principles to the art or science to which they pertain. According to this definition, no theory about a fact is correct that does not lead to a correct application of the principles pertaining to that fact. In agriculture it is a most important thing for the farmers to accept no theory that in its application conflicts with facts. The great variety of climate we have in the province of Quebec, in which there are three sections each differing considerably from the others in climatic conditions, implies that many good theories which can be applied in one of these sections cannot be applied successfully in the other two. One of these districts is the Lake St. John and Saguenay region; another extends from the city of Quebec along the south shore of the St. Lawrence river to the eastern extremity of the province; and the third one comprises the rest of the province, west of Quebec city.

These climatic divisions being taken into consideration, we find that as to the cultivation of the soil, the selection of plants to grow, the raising of cattle for various purposes, the practice of horticulture, &c., many theories that are excellent in their application in the western part of the province are not so when applied in the eastern and northern sections. This has been the cause of much disappointment in the past to those who, wishing to apply principles considered good in the every-day practice of the western farms, on the farms in the eastern and northern districts, have been unsuccessful. Hence has arisen a feeling of diffidence towards what is called 'book farming,' taught in the courses of the western agricultural colleges of the United States and Ontario.

If we wish to cope successfully with the false position now taken by our farmers in the province of Quebec, we must first find out and then teach them what they can do under the adverse circumstances they must encounter. Can we do that by having only one big agricultural college in the west of the province for the whole province? Assuredly not. First, their prejudice will prevent them from going there. Second, they are not at all prepared to take the courses given in such colleges. Even in the States they have found that it is absolutely necessary to have secondary agricultural schools to prepare the students to take advantage of the higher courses in agriculture.

Then, what we have to do, and that as soon as possible, is to have three of those secondary agricultural schools in the three sections of our province above mentioned. Two are already in existence, one at Oka, Two Mountains county, for the west, and another at Ste. Anne de la Pocatière, Kamouraska county, for the east. Let us have a third one at Lake St. John for the north and then we shall have a good foundation for a first-class agricultural education for all our farmer boys, who in a few years will be numerous enough to warrant the establishment of a big central college where they may go to obtain the highest class of agricultural knowledge. May our

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economists take hold of this idea and bring about its solution as soon as possible, and we shall soon see the production of our land more than doubly increased.

At the same convention I took part in an important discussion on fertilizers.

The summer convention of the Quebec Pomological Society was the third provincial gathering I attended. It was held at St. Jean Port Joli and Village des Aulnaies, L'Islet county, on September 24 and 25. The semi-annual fruit exhibition of the L'Islet Horticultural Society was held on the 24th, and I was appointed a judge for that exhibition. I also delivered at the convention the following lecture on

PULP WOOD AND DEFORESTATION BELOW QUEBEC.

'We hope that, though we are the first to bring the subject of forestry before this association, we shall not incur the displeasure of any of the members. We do it because we wish to speak of a forestry question which is of the greatest importance to the section of our province in which we are holding this convention. This question is the wholesale deforestation of our district, for the production of pulp wood.

'Everybody knows how detrimental wholesale deforestation is to the distribution of water, to regular rainfall, to the normal conditions of climate and to the value of cultivated lands. By wholesale deforestation we mean completely clearing the land of all the trees that cover it. When the forest is dense it is seldom we see that complete denudation, but when it takes place it hastens the melting of the snow in the spring and brings a great quantity of water all at once into the rivers, which overflow and cause great damage in the districts through which they run. That water, which in the forest would ooze slowly through the humus and roots contained in the soil and constitute a reserve which would flow slowly down the mountain slopes all summer, is carried away in a few days instead of a few months, and the rivers are left dry during summer. Thus land and animals, as well as people, are deprived of water which they imperatively need, and the decrease in evaporation causes long periods of drought and such a change in the climate that agriculture and all concerned in it suffer greatly. Let us remember, too, that it lessens very much the value of the cultivated lands in the vicinity of the destroyed forest, which can supply no more fuel nor timber to the owners of those lands, for their use.

'Now, the conditions brought about by wholesale deforestation will before long obtain in eastern Quebec, owing to the fact that the owners of the land, after having cut many of the trees for timber, lumber and firewood, are now making a complete clearing of all the soft wood fit for pulp. Every year great numbers of trees, some as small as three inches in diameter, are cut for this purpose, and soon there will be no more wood, even for fuel, in the Alleghany district.

'We know localities on the shores of the St. Lawrence river where there is so little maple or black birch for firewood that we have to pay \$5 a cord for it, and where we shall soon have no more spruce. As things stand now, those kinds of wood cost, ready for the stove, \$5 and 3 a cord, respectively, to those who pay to have it drawn home from the forest, and there is so little of them that we may say that in some localities, in ten years from now, all that is available will have disappeared.

'Is there any way to check that systematic wholesale deforestation? This is the question we wish you to discuss with us, gentlemen. We know that our forests are one of the best of our national resources; that their exploitation is one of the great sources of revenue; that we still have very large areas of our province so completely covered with forest that with a systematic exploitation, by the parcelling-out method, we can obtain a large quantity of wood every year from them without destroying the forest itself. We know also that in those parts of our province where the forest will disappear on account of the devastation now going on so extensively, through lack of foresight on the part of its owners, we shall suffer all the disadvantages met with by those who, in older countries, have made the same mistakes.

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'Of course, we recognize that it is a very difficult question to deal with. We cannot compel land owners by law to stop making pulpwood on their own property. We understand that it is a very great temptation for a man to know he can get \$6 for a cord of spruce, and it always induces him to cut that cord of wood. What, then, can we do? But, first of all, let us try to find out if anything can be done.

'As to ourselves, we think that our society should communicate with the Canadian Forestry Association and ask it to consider thoroughly, at its next convention, the question of deforestation in the long settled sections of the Dominion and especially in our relatively old province, which was the first in Canada to be settled. After having given its attention to the question it could issue a bulletin, in French as well as English, dealing with it fully. The association would in that way try to convince the farmers that the forest is an asset entrusted to us by God, so that we may use it as a source of revenue, but that we must accumulate rather than squander, by practising economy, which is a moral duty; for, as we benefit by the savings of those who have lived before us, so those who will come after us will have the right to benefit by our own savings. The bulletin should also show the cost of the stupendous work of reforestation that other countries have been obliged to do in order to repair the great damage done by deforestation.

'Such a bulletin, distributed amongst the population, should have the same educational effect on the people as we hope will result from the dissemination of bulletins and tracts for the purpose of checking tuberculosis or intemperance.

'We hope, gentlemen, that whatever may be your opinion as to the means of checking the evil pointed out in this paper, you are unanimous in looking upon it, as we do, as one which calls for a prompt consideration of the means of remedying it. Further, we beg leave to suggest that after our discussion of this question—if there is any, as we hope there will be—our committee on resolutions should draft a summary of our suggestions, to be sent as a resolution adopted by this convention to the secretary of the Canadian Forestry Association.'

The second day of the convention was spent at Village des Aulnaies, nine miles from St. Jean Port Joli, where Mr. Albert Verreault's nursery and the residence of Mr. Auguste Dupuis, the president of the Pomological Society, whose guests we were, are situated.

The winter convention of the Pomological Society was held at Ste. Anne de Bellevue on December 18 and 19. The directors of the society were the guests of the Macdonald College, having accepted the kind invitation of Dr. James W. Robertson, principal of that institution. This was the fourth provincial convention I attended. Besides interpreting in English two French lectures written by members of the society for that convention, I delivered the following address on:

TREE SURGERY.

The paper I am going to read may seem to have a queer title. Surgery is an art which applies more to men and beasts than to trees, if we take it in the general acceptation of the word; but, as you will readily see in listening to the development of my subject, the word 'surgery' is much better than any other to qualify the kind of operations I am going to describe, for the preservation of ornamental and fruit trees.

First I must say that my paper has been written less for the benefit of owners of large orchards covering acres and acres of land, or of forest-like parks, than for those owning small orchards of one or two acres in extent, or a few ornamental trees around their house and farm buildings. The owner of a large orchard or park can without much detriment suffer the loss of a few trees through the action of heavy falls of snow, the violence of stormy winds, or the overbearing of fruit; and it would not be practicable for him to undertake the restoration of a large number of broken trees, on account of the high cost of the operation. On the contrary, a man owning a small orchard, or a village lot surrounded by ornamental trees, has great interest in keeping

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all his trees in the best of condition, and cannot afford to lose a fine tree about fifteen or twenty years old, occupying a prominent place on his small holding, especially if there is any way of saving it.

I beg you to bear in mind that I am not referring at all to pruning when I speak of surgical operations to be performed on damaged trees. To nip off a new shoot, to cut out a small branch with the pruning knife, to shorten a young limb with the pruning shears, to remove a large branch with the pruning saw, all this means pruning; but to preserve two branches torn asunder by the splitting of the crutch of the tree, where they were united, to straighten bent or broken limbs, to set upright a branch growing crooked from the trunk, that is what I call tree surgery.

The tree surgeon should have a good and complete set of instruments to perform his operation, viz.: a hatchet, a hammer, a saw, a chisel, a monkey wrench, a brace with an assorted set of bits, two or three gimlets of various sizes, a piercer; then he should have in readiness a good assortment of bolts of all sizes, from 8 inches to $\frac{1}{2}$ inch, with nuts and washers, assorted wire nails from 12d to 3d, i.e., from 3 inches to 1 inch, some galvanized wire of 8, 10, 12 and 14 gauge, an assortment of hardwood splints of various sizes, strips of cotton 2 and 3 inches wide, grafting wax, &c.

There are three special classes of surgical operations to be performed on trees in order to preserve their limbs and their shape. Sometimes, as has been mentioned above, a tree is split in the first crutch, from where the larger limbs branch off. This happens most often in winter, after a heavy fall of snow, and the damage thus caused is noticed only in the spring. There are two ways of dealing with such an accident. If the tree is rather small, cut clean with the chisel all the inside splinters so as to obtain a smooth, adhering surface, taking good care not to touch the bark; tie the branches together with a rope so as to join the two split parts; drive through both a wire nail long enough to protrude; carefully clinch the point of the nail; put on a good application of grafting wax, so as to prevent the entrance of water, air and insects; wrap the united parts with strips of cotton wound round and overlapping; then take off the rope, and after two seasons of growth take away the cotton if it is still there.

With big trees, the operation is a little different. The first part is performed as described above, but, when the branches are to be tied with a rope in order to join them together, you may have to raise them by putting a piece of board under them while some one else lifts them up. Then you proceed to make a hole with the brace and bit, and instead of a nail you use a bolt and nut long enough to fit the diameter of both branches united. Always use washers with the bolts. Then you continue and finish the operation as in the first case.

Sometimes you may have to deal with what I call the second class of operations. These are performed on branches that have been bent down and kept so bent, either by the weight of snow on the limbs or by overbearing of fruit. If the injury has been caused by the presence of snow, as soon as the ground is bare and there is no more frost in the limbs, have somebody lift the branch for you and straighten it up. Sometimes you will find that the bend is so sharp that the branch is half broken, but do not get discouraged at that. Straighten it with great care and take away the splinters, if there are any, so as to get a close union of the broken parts. Take a splint of hardwood about 1 inch wide, $\frac{1}{2}$ inch thick and 2 feet long, as stiff as possible; apply it to the bent or broken branch, on the outside of the bent part; tie the two ends of the splint to the branch with a rope, in order to make it adhere tightly. Then use the brace and bit to make a hole at each end of the splint and through the branch, and bore a similar one in the middle of the splint. Insert three bolts of a size suiting the diameter of the branch, tighten them with the nut and take off the rope. If the bent branch thus repaired is broken, put some grafting wax on that part, wrap it with strips of cotton, taking in the splint and branch together, and everything will be O.K.

The third class of operations the tree surgeon may have to perform necessitates the use of the pruning saw and of some wire. This happens in the case of stout

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branches or limbs which have been bent under the weight of a heavy crop of fruit and which have remained so bent during the whole summer, till the gathering of the fall fruit. In such cases wood growth on the bent limbs has taken place for at least three months and it is absolutely impossible to straighten such a branch without running the risk of breaking it. I shall indicate a sure method of performing the operation without injuring the limb. For about two feet on the outside of the sharpest part of the bend, make with the pruning saw, half way through the wood of the branch, saw-cuts at intervals of half an inch, taking good care before beginning to place a support under the branch to prevent it from splitting during the operation. After the branch is so cut, tie it with a rope to a sound branch while some one else straightens it up. It yields readily to the pressure from below and the narrow gaps left by the saw-cuts are filled up. When the branches are well straightened, make with the brace and bit, or gimlet, a hole in each of the straightened limbs at a height of about two feet above the part where the operation has been performed. Pass through each of the holes a wire of a gauge or strength corresponding to the weight of the branch, and clinch it on the outside of each branch so that it may hold the branches together tightly. Then apply a dressing of grafting wax and cotton strips, as mentioned for the other classes of operations, and in two seasons of growth all will be healed.

I have practised the three classes of operations on many trees in my own orchard for many years, and always with the best of success. I have trees with as many as fourteen bolts in their branches, not one of them to be seen now, because they are covered with the growth of new wood. Of course it may happen that in future years, when such trees are old and replaced by new ones, somebody may find, when splitting the old trunks for firewood, some hard knots to crack, but this is of no consequence to the man who wishes to save a valuable tree from destruction. Those trees are all healthy and good looking and bear abundant crops of valuable fruit.

I wish to add a word of caution to what I have already said on this subject. Never use a wire or a tie of any kind *around* the branches or trunk of a tree when it is to remain more than one season on the tree. Always pass it *through* the branch or trunk, never around it.

I have given you my experience in that matter because I have seen so many people wondering how a tree may stand such treatment and still live and bear fruit. As some of the operations above mentioned may seem a little extraordinary, I am glad to have here Mr. Raynaud, the able nurseryman of the reverend Trappist Fathers of Oka, who, from what he has seen at my place, can testify to the success obtained with such methods of saving trees.

On February 4th and 5th I attended the twenty-sixth annual convention of the Dairymen's Association of the province of Quebec, at Three Rivers, and delivered a lecture on foreign work in dairying.

I classify as having the character of provincial conventions the courses of lectures which I delivered to the students of the St. Hyacinthe Dairy School.

COUNTY AND DISTRICT CONVENTIONS.

I have delivered, during the last twelve months, twenty-eight lectures before county and district conventions.

Twenty-one of those lectures were delivered last winter in a series of farmers' institute meetings held between February 26 and March 13, in the counties of Two Mountains, L'Assomption, Montcalm, Joliette, Berthier and Rouville. I was accompanied on that trip by Mr. Félix Charlan, specialist in tobacco culture, of the Department of Agriculture, Ottawa, and Mr. Victor Fortier, assistant poultry manager of the Central Experimental Farm, Ottawa.

This series of lectures was held in localities where the farmers devote much attention to tobacco culture, and Mr. Charlan and I were sent with special instructions

to speak more on that subject than on any other. The subjects treated by Mr. Charlan were: 'Tobacco Culture,' 'Selection of Varieties,' and 'Special Method of Production of Tobacco Seed.'

Mr. Fortier spoke on 'The Importance of Poultry Raising on the Farm,' 'The Cold Poultry House,' and 'Statistics on Poultry and Eggs.'

As to myself, I addressed the farmers on 'A Special System of Rotation for Tobacco Culture,' and when we had two meetings in the same locality I gave a general lecture on dairy husbandry. In my address on a rotation for tobacco I advocated a three-year rotation: first year, tobacco; second year, a grain crop, especially barley if possible, with clover seed; third year, clover crop.

I am glad to be able to say that during the trip I saw plenty of evidence of the progress farmers have made in tobacco culture and poultry raising, by following the advice given in the last two years by Messrs. Charlan and Fortier. The tobacco crop has in many places increased from 1,000 to 1,500 lb. to the acre, and I have visited many cold poultry houses giving much profit to their owners by the production of eggs in winter.

The following condensed table contains a few notes on the localities visited, the meetings held, the number of farmers present and the success of the series.

Counties.	Localities.	Date.	First meeting attendance.	Second meeting attendance.	Remarks.
Two Mountains	St. Scholastique ..	Feb. 27..	225	100	Very good meetings, attended by farmers eager to get information. Many samples of tobacco exhibited.
"	St. Eustache.....	" 28..	25	20	Very poor attendance and little interest shown.
Assomption....	L'Assomption....	" 29..	125	.....	The audience was composed of the very best farmers of the locality.
"	L'Epiphane.....	" 29..	75	.....	Much attention was paid to the three lectures.
* Montcalm.....	Ste. Julienne.....	Mar. 3..	200	15	The afternoon meeting was attended by a good class of general farmers, but we had only 15 in the evening, these being all the first class tobacco growers of the vicinity.
"	St. Esprit.....	" 4..	200	.....	These two meetings were composed of farmers much interested in tobacco growing, poultry raising and dairying.
"	St. Alexis.....	" 4..	200	.....	These meetings were the largest of the series. We saw here the finest tobacco and the best cold poultry houses.
"	St. Jacques.....	" 5..	300	250	
Joliette.....	Ste. Marie Salomé	Mar. 6..	100	.....	The farmers we met at these two meetings seemed to be anxious to develop tobacco-growing in their localities.
"	St. Paul.....	" 6..	80	.....
Berthier.....	Berthierville.....	" 7..	225	.....	There are only a few farmers interested in tobacco-growing, but one of them is the largest grower in the whole district. Poultry raising and dairying have many enthusiastic adepts.
Joliette.....	St. Ambroise.....	" 9..	200	.....
"	Ste. Elizabeth....	" 10..	100	.....	A good locality for tobacco-growing, which seems to be developing.
Rouville	St. Césaire.....	" 11..	125	125	
"	Marieville.....	" 12..	100	.....	It is in these two parishes that the best success has been obtained by following Mr. Charlan's method.

*We were to hold two meetings at St. Liguori, Montcalm county, on March 2nd, but we were prevented from holding them by a violent snow storm which stopped all communication for that day.

Besides the twenty-one lectures given at county and district conventions mentioned above, I attended two other county meetings, one at Louiseville, Maskinongé

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county, and another at Frampton, Dorchester county. I attended the former to meet the buttermakers of Maskinongé county, with Mr. J. D. Leclair, inspector general of creamery syndicates of the province of Quebec. I attended the second one with Mr. J. A. Plamondon, assistant inspector general of cheese factory syndicates, for the purpose of meeting the cheesemakers of Dorchester county.

I was also invited to visit the Roberval Domestic Science School of the Reverend Ursuline Sisters, at Lake St. John, on the occasion of the 25th anniversary of the foundation of that school, which was celebrated on August 1, 1907, and to visit the Stanstead Domestic Science School of the Reverend Ursuline Sisters, which is a relatively new institution. On those two visits I developed the ideas expressed in a lecture on 'Schools of Domestic Science,' which I summarized in my last report.

The three remaining lectures at county meetings were delivered at Malbaie, Charlevoix county, and at St. Jean Port Joli, L'Islet county.

LECTURES BEFORE FARMERS' CLUBS.

I delivered twenty-six lectures before farmers' clubs, of which there are now nearly 600 in the province of Quebec. The lectures dealt with the following subjects: 'Bacon Production,' 'Selection of Milch Cows,' 'Co-operation amongst Farmers,' 'Cow Testing Associations,' 'Sheep Raising,' 'Economy in Agriculture,' 'Improvements in Dairying,' and 'Seeds.' Synopses of these lectures are contained in my previous reports.

LECTURES AT PARISH MEETINGS.

In seven parishes where there are no farmers' clubs I delivered addresses on 'Economy in Agriculture' and 'Improvements in Dairying,' and one on the benefits of farmers' clubs.

ST. HYACINTHE DAIRY SCHOOL.

On account of a change in the management of the St. Hyacinthe Dairy School, I attended only two courses and the annual spring meeting of the syndicate inspectors there during the last twelve months.

INSPECTION OF FACTORY SYNDICATES.

I made a complete inspection of all the factories in three syndicates, two composed of cheese factories and one of creameries.

In inspecting the creamery syndicate of Mr. Henry Bouchard, in Maskinongé and St. Maurice counties, I visited 24 factories, met 838 patrons and delivered 48 lectures in 8 parishes.

My second inspection was made in the cheese factory syndicate of Mr. L. E. Faucher, in Beauce and Dorchester counties. I inspected 29 factories there, met 728 patrons and delivered 56 lectures in 10 parishes.

In the cheese factory syndicate of Mr. Elzéar Dumas, in Témiscouata and Rimouski counties, I inspected 19 factories, met 1,178 patrons and delivered 38 lectures in 15 parishes.

Summing up the work of those inspections I find that I travelled 1,012 miles, inspected 72 factories and delivered 150 lectures in 39 days, in 6 counties and 33 parishes.

In the course of the inspections I distributed among the factory patrons 3,000 copies of our bulletin No. 12, on 'Cow Testing Associations,' after lecturing on that subject.

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OFFICE WORK.

Though most of my time is devoted to travelling for lecture and inspection work, yet I have to spend some of it in my office attending to correspondence, the preparation of lectures, the writing of articles for the agricultural press and the reading and classification of the numerous papers, reviews and bulletins coming from various sources. Inquiries on various topics come from many quarters, very often on subjects not at all related to dairying, and especially on fruit growing.

With these last remarks I beg leave to close the eighteenth annual report of my work as assistant dairy commissioner.

I have the honour to be, sir,

Your obedient servant,

J. C. CHAPAIS,

Assistant Dairy Commissioner.

REPORT

OF THE

DAIRY AND COLD STORAGE COMMISSIONER

FOR THE

FISCAL YEAR ENDING MARCH 31

1908

PART III.—FRUIT DIVISION.

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tion of Fruit Marks Act.*

PART III.—FRUIT DIVISION.

OTTAWA, March 31, 1908.

Mr. J. A. RUDDICK,
Dairy and Cold Storage Commissioner,
Ottawa.

SIR,—I have the honour to submit a report of the Fruit Division for the year ending March 31, 1908.

THE STAFF.

The staff consists of nine permanent inspectors and nine temporary inspectors.

A change was made in the method of inspection in the province of Nova Scotia. In former years most of the inspection, during the shipping season, was made on the docks at Halifax. Owing to the fact that the carloads of apples are not taken down to the freight sheds until the ship is ready to receive the fruit, no proper opportunity for examining the fruit was given to the inspectors. Their work was confined to the short time which it took the combined force of longshoremen to load five or six carloads of fruit. This gave the inspectors only about an hour, and sometimes less, for the work of their examination, which was quite inadequate.

Fortunately, the mode of packing the fruit has changed somewhat among the fruit growers. The practice is becoming more common of gathering the fruit into fruit houses and re-packing there into export packages, which are then loaded directly on the cars. The packing warehouses, therefore, become a convenient place in which the inspectors can examine the fruit after it has been marked and graded, and before it is loaded on the cars. In this way the work of inspection can be done with some thoroughness and with advantage to both packers and inspectors.

The apples of Ontario are orchard packed until about the first or middle of November; after that they are gathered into warehouses and repacked for export.

The plan was tried this year, in a limited way, of examining fruit in orchards over the district from Toronto to Belleville. Mr. W. W. Brown was detailed to work within these limits, not confining himself specially to orchard packing but including as well carload lots ready for shipping at the stations. By this method fewer examinations can be made, but there are compensating advantages that would very strongly recommend the extension of this system. The presence of an inspector in a district has a salutary effect. Packers who lack experience in grading have an opportunity of meeting an inspector who can give them definite instructions with reference to grading, and thus help materially to establish uniformity in the grades.

THE PECULIAR DIFFICULTIES OF THE SEASON.

The season of 1907 was, in many respects, a remarkable one in the apple industry. The spring was very late. During the months of July and August and the first part of September, very little rain fell. As a consequence of the late spring and the mid-summer drought, the apples, prior to the ripening period, were very small and quite immature. Fortunately, during the latter part of September and in October there was a copious rainfall, making the conditions of growth excellent for the apple.

But this change in the weather came too late to correct the injuries of the early part of the season. The third week of October a very heavy frost occurred that

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caught many of the winter apples still on the trees. It is needless to say that these were materially injured for storing purposes.

One of the results of these conditions was that the harvesting of the fruit was crowded into an exceedingly short period of time. Help, as is usual at this time of the year, was very scarce; and, even if everybody had been anxious to pack in accordance with the Fruit Marks Act, it would have been impossible to secure, under the present system, a sufficient quantity of labour intelligent enough to pack the fruit uniformly and well. Combined with this, the confidence which had been inspired in the minds of the buyers by the enforcement of the Fruit Marks Act since its inception, induced many prominent dealers from England to advance large sums of money to local men. So great was their confidence in the influence of the Fruit Marks Act, that they did not take any precaution to follow their money with any efficient system of inspection to determine whether they were getting the fruit for which they had paid.

Owing to many causes, very high prices were paid in the early part of the season, and apples were bargained for in extraordinary quantities long before they were ready for picking. The high prices naturally induced the owners of the apples to pick, ship and store everything on the trees that could be called fruit, no matter how defective. Unfortunately, too, the buyers found it easier to purchase apples by the orchard, that is, buying all the apples of every grade just as they were upon the trees at a definite sum of money for the whole. This is called buying by the 'lump.' It was not difficult to trace many of the breaches of the Fruit Marks Act directly to this system of buying by the 'lump.'

A local buyer who had received advance money from an English firm, upon the agreement of furnishing No. 1 and No. 2 apples at a fixed advance for each, had strong temptations, when he purchased orchards by the 'lump,' to pack as much fruit inferior to No. 2 as he possibly could. Owing to the dry weather the apples were particularly clean and bright, but small, so that buyers found themselves with a large quantity of very clean, bright coloured apples in their possession, but too small to grade No. 1. As their only difficulty was one of size, and as this difficulty would not have been counted seriously against a limited quantity of any particular variety, buyers had no compunction of conscience, and, indeed, there was no law to prevent them, in grading this clean, bright fruit as medium sized No. 1. As there is no standard of size more definite than the word 'medium,' it is easy to see that there might be a wide difference of opinion with reference to any particular specimen as to whether it was a medium sized fruit or not; consequently, the complaints this season from Great Britain have been greater than any year since the passing of the Fruit Marks Act.

ADDITIONAL EFFECTS OF HIGH PRICES.

The high prices that were paid primarily as the result, possibly, of the supposed shortage and partly the result of extraordinary advances of money from Great Britain, naturally induced the buyers of 'lump orchards,' and indeed all who had control of the apples at the time of picking, to store a much lower grade of fruit than would have been stored had the prices promised to be medium or low. This class of fruit would have gone to the evaporator or the cider press, and much of it would probably have been fed to live stock. Having incurred the expense of picking, packing and freight to the storehouses, the temptation was naturally great to include a portion of this fruit in the grades No. 1 and No. 2. As might have been expected, such fruit was not accepted in the British market, except at very low prices.

After the first of November there was a continuous drop in the wholesale price until the middle of January. This made it difficult for the apple merchants of Great Britain to dispose of even the best stock at a profit. Inferior grades on this falling

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market were a source of serious loss. Had the quantity of these inferior grades been normal and had the price at which they were bought been low, in all probability they would have been readily absorbed at a paying price, and no complaints would have been forthcoming, even though the packing was not what it should have been. The complaints then are the result of a somewhat larger proportion of apples wrongly graded and marked, and partly of the heavy financial losses of the dealers as the result of a continuously falling market.

INSPECTION.

Anticipating some of the difficulties of the season, the staff of the Fruit Division were on the alert for violations of the Fruit Marks Act. The organization of the inspectors was never better and, as the statistics will show, a larger number of inspections was made this season than ever before. It is to be regretted that the proportion of violations is also greater this year than any year since the inception of the Fruit Marks Act.

Below are given the statistics of inspection for the past seven years:—

—	1901-2.	1902-3.	1903-4.	1904-5.	1905-6.	1906-7	1907-8.
No. of lots inspected.....	1,468	1,470	1,964	1,641	2,813	2,440	7,352
No. of pkgs in lots inspected.	65,880	154,220	234,343	212,348	330,681	330,866	981,632
No. of pkgs inspected.....	3,155	8,341	10,702	8,798	11,423	13,406	43,243

PROSECUTIONS.

Whenever an inspection is made constituting an offence sufficiently serious to justify a prosecution, the inspector notes upon the report a recommendation that a prosecution be made. The inspector brands the packages he has inspected 'falsely marked' or 'falsely packed' as the case may require, and a notice is sent immediately to the person whose name appears upon the brand. At the same time, the report is sent to the head office at Ottawa. The person packing such fruit is notified from the office that a prosecution is recommended and an explanation is asked for. Usually in the case of a first offence, or where there are other extenuating circumstances, a prosecution does not follow. In all other cases a prosecution is instituted. As a case has to be tried where the offence was committed, it is frequently necessary to take the inspectors, who are witnesses, long distances to attend court. Since the law allows a period of six months in which to lay an information, it is often deemed inexpedient to take the inspectors away from the work of inspection during the busy shipping season for the purpose of acting as witnesses at distant points. Many of the prosecutions, therefore, are made after the close of the port of Montreal in the latter part of November. This year, however, several cases were prosecuted early in the season for the purpose of impressing the shippers with the fact that the Fruit Division would follow the recommendations of the inspectors and prosecute any cases advised by them. Notwithstanding this warning, many packers continued to violate the Fruit Marks Act, with the result that the number of prosecutions this year is greater than ever before in the history of the Act.

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CONVICTIONS UNDER THE FRUIT MARKS ACT.

The following persons have been convicted of violation of the Fruit Marks Act during the season 1907-8.

Name.	Address.	Number of Charges.
Amabel & Arran Fruit Growers' Association.....	Allenford, Ont.....	5 charges.
Geo. E. Alger.....	Frankford, Ont.....	2 charges.
Philip Austin.....	Arkona, Ont.....	3 charges.
C. Baily.....	Elmwood, Ont.....	
Cormon Baker.....	Brighton, Ont.....	
Robert Balfour.....	Port Perry, Ont.....	
H. A. Beech.....	Brighton, Ont.....	
H. Bickle.....	Brooklyn, Ont.....	3 charges.
John Bongard.....	Pictou, Ont.....	2 charges.
W. R. Bonter.....	Trenton, Ont.....	4 charges.
Albert Brent.....	Port Perry, Ont.....	2 charges.
A. E. Brown.....	Ameliasburg, Ont.....	
Edwin Brown.....	Port Hope, Ont.....	
Jas. Caesar.....	Lucknow, Ont.....	
D. Cantelon.....	Clinton, Ont.....	3 charges.
Geo. Cantelon.....	".....	
Frank Casner.....	Harley, Ont.....	3 charges.
Blake Cheer.....	Brighton, Ont.....	
Thos. H. Cheer.....	".....	
A. D. Clapp.....	".....	
A. A. Clarke.....	".....	
Robert Coyle.....	Colborne, Ont.....	6 charges.
Wm. Dauncy.....	Exeter, Ont.....	
G. W. Davis.....	Colborne, Ont.....	
Sam. Dudley.....	Colborne, Ont.....	
J. Duncan.....	Exeter, Ont.....	
E. E. Elliott.....	Harley, Ont.....	
Robert Elliott.....	Goderich, Ont.....	
L. Emerson.....	Tweed, Ont.....	
T. H. Everson.....	Oshawa, Ont.....	
F. A. Ferguson.....	Frankford, Ont.....	
G. H. Flood.....	Paisley, Ont.....	
G. W. French.....	Colborne, Ont.....	2 charges.
A. D. Fulford.....	Brighton, Ont.....	2 charges.
Harlow Fulford.....	".....	
A. L. Futher.....	New Dundee, Ont.....	7 charges.
A. Galbraith.....	Parkhill, Ont.....	5 charges.
A. Gerrie.....	New Dundee, Ont.....	
Gifford & Conlin.....	Oshawa, Ont.....	3 charges.
R. J. Graham.....	Belleville, Ont.....	3 charges.
Groff & Onderdonk.....	Trenton, Ont.....	
E. M. Henry.....	Oshawa, Ont.....	2 charges.
Henry Herrington.....	Brighton, Ont.....	2 charges.
S. P. Herrington.....	".....	2 charges.
A. K. Hodgins.....	Lucan, Ont.....	
Reginald Hodgins.....	Saintsbury, Ont.....	
W. M. Ives.....	Brighton, Ont.....	
W. M. Jenkins.....	Clinton, Ont.....	
Jones & Clark.....	Exeter, Ont.....	
John Joynt.....	Lucknow, Ont.....	
F. H. Lazier.....	Brighton, Ont.....	2 charges.
Allen Lovett.....	".....	
J. E. McDonald.....	Colborne, Ont.....	
Chas. McFalls.....	Mooreville, Ont.....	
Cecil McLeod.....	Centralia, Ont.....	
Alex. McPherson.....	Exeter, Ont.....	
Jas. Marchen.....	Tweed, Ont.....	
W. Mirron.....	Wooler, Ont.....	
W. G. Monet.....	Port Perry, Ont.....	3 charges.
F. C. Morrow.....	Colborne, Ont.....	2 charges.
Sam. Nesbitt.....	Brighton, Ont.....	2 charges.
M. B. Nichols.....	".....	
Orono Fruit Growers' Association.....	Newcastle, Ont.....	
Parkhill Fruit Growers' Association.....	Parkhill, Ont.....	3 charges.
H. Peters.....	Toronto, Ont.....	
Wm. Reid.....	Lucan, Ont.....	
John Royal.....	Belleville, Ont.....	
S. Rutley.....	Exeter, Ont.....	
R. K. Scott.....	Port Hope, Ont.....	4 charges.
W. H. Smith.....	Brighton, Ont.....	
W. T. Smith.....	Chesley, Ont.....	2 charges.
S. Summerfeldt.....	Sutton, Ont.....	2 charges.
T. J. Thompson.....	Spring Brook, Ont.....	
Robert Wade.....	Brighton, Ont.....	2 charges.
R. Weston.....	Clinton, Ont.....	
Frank Wilson.....	Lakeport, Ont.....	
John & Robert Coyle.....	Colborne, Ont.....	
S. W. Staples.....	Baltimore, Ont.....	

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Name.	Address.	Number of Charges.
Raymond Alix.....	Sherbrooke, P.Q.....	2 charges.
Ephrem Charron.....	Rougemont, P.Q.....	
C. O. Allen.....	Kentville, N.S.....	
J. B. Allison.....	Windsor, N.S.....	
G. W. Beckwith.....	Sheffield Mills, N.S.....	
G. E. Best.....	Waterville, N.S.....	
J. Earle Bigelow.....	Canning, N.S.....	
Craig Caldwell.....	Cambridge, N.S.....	
D. P. Foster.....	Clarence, N.S.....	
J. D. Gates.....	Margaretville, N.S.....	
T. L. Harvey.....	Wolfville, N.S.....	
A. F. McBride.....	Canning, N.S.....	
J. Maxner.....	Wolfville, N.S.....	
H. C. Marshall.....	Williamston, N.S.....	
G. N. Marshall.....	Bridgetown, N.S.....	
C. Messenger.....	Tupperville, N.S.....	
T. T. Messenger.....	Centerville, N.S.....	
C. Morse.....	Melvorn Square, N.S.....	
J. M. Payzant.....	Falmouth, N.S.....	
G. N. Reagh.....	Middleton, N.S.....	
Reed & Jones.....	".....	
G. Starritt.....	Paradise, N.S.....	
L. J. Whitman.....	Waterville, N.S.....	
A. D. Wilkins.....	Clarence, N.S.....	

A few more cases are still pending. The fines imposed have been absurdly small considering the nature of the offence, the magistrates in most cases imposing the minimum of twenty-five cents per barrel—a penalty which experience has shown is not a sufficient deterrent.

It has been found that some of the packers have taken advantage of the 20 per cent allowance in the definition of No. 2 apples to include that proportion of absolute trash, which if not a violation of the letter of the law is certainly contrary to the spirit of the law. Parliament has been asked to amend the law as follows* :—

A new section is added to define the term ‘culls,’ namely:

‘(c) “Culls” shall include fruit that is either very small for the variety, or immature, or the skin of which is broken so as to expose the tissue beneath, or that is so injured by insects, fungi, abnormal growths, or other causes, as to render it unmerchantable.’

The definition of No. 2 grade as proposed reads:

‘No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in a closed package, upon which package is marked any designation which represents such fruit as of No. 2 quality, unless such fruit *includes no culls and*† consists of specimens of not less than nearly medium size for the variety, and not less than 80 per cent free from worm holes and such other defects as cause material waste, and properly packed.’

The penalties for first offences have been increased, with further increases for second, third and subsequent offences. The new penalty sections of the Bill are as follows :—

‘328. Every person who by himself or through the agency of any other person, violates any of the provisions of sections 320 and 321 of this Act (marking and packing), shall be liable, for the first offence, to a fine not exceeding twenty-five dollars and not less than ten dollars; for the second offence, to a fine not exceeding fifty dollars, and not less than twenty-five dollars; and for the third and each subsequent

* These amendments were assented to and became law on July 20, 1908.

† The words in italics are new.

offence, to a fine not exceeding two hundred dollars and not less than fifty dollars, together, in all cases, with the costs of prosecution; and in default of payment of such fine and costs shall be liable to imprisonment, with or without hard labour, for a term not exceeding one month, unless such fine and costs, and the costs of enforcing them, are sooner paid.

‘2. Whenever any such violation is with respect to a lot or shipment consisting of fifty or more closed packages, there may be imposed, in addition to any penalty provided by this section, for the first offence twenty-five cents, for the second offence fifty cents, and for the third and each subsequent offence one dollar, for each closed package in excess of fifty with respect to which such violation is committed.’

Section 329‡ of the said Act is amended by striking out, at the end thereof, the words ‘forty dollars,’ and adding thereto the words ‘one hundred dollars for the first offence, and two hundred dollars for the second and each subsequent offence, together, in all cases, with the costs of prosecution; and in default of payment of such fine and costs shall be liable to imprisonment, with or without hard labour, for a term not exceeding one month, unless such fine and costs, and the costs of enforcing them, are sooner paid.’

The following table gives the statistics of the convictions secured under the Fruit Marks Act since its inception:—

—	1901-2.	1902-3.	1903-4.	1904-5.	1905-6.	1906-7.	1907-8.
Ontario.....	9	15	23	6	22	22	155
Quebec.....	1	1	1	.....	6	.....	2
Nova Scotia.....	2	6	10	3	16	14	21
New Brunswick.....	.....	.....	5	.....	1	.....	.....
Manitoba.....	.....	4	2	2	1	1	.....
British Columbia.....	.....	.....	2	1	4	3	.....
	12	36	43	12	50	40	178

FRUIT CROP REPORTS.

Five fruit crop reports were issued during the fruit season, at the end of the calendar month, from April to September. They were particularly useful this year owing to the exceptional nature of the season.

The winter of 1906-7 was severe and some injuries were reported to trees of all kinds. The Japanese plums suffered particularly, as did also peach trees in the Essex district. Peaches were particularly affected among the tree fruits, and unmulched strawberries and raspberries among the small fruits.

The exceptionally cold spring retarded the opening of the leaf buds and blossom buds from one to three weeks. Relatively the southern portions of Canada were later than the northern portions of the fruit belt. These conditions had a very marked effect upon the markets, especially for small fruits. / Usually there is a difference of two or three weeks between the time of ripening of strawberries in Southern Ontario and in the neighbourhood of Montreal and Ottawa, the largest markets for the small fruits of Southern Ontario. Owing to the conditions prevailing this season the small fruits from Southern Ontario reached these large cities only a few days earlier than the local crop; and, notwithstanding the fact that there was a decided shortage in small fruits in the aggregate, yet, as both the distant fruit and the local fruit arrived on the market at the same time, prices were not always as good as the shortage would have indicated. The canneries, however, were short in their acreage for the season, and they came into the markets with a much higher price than usual, offering fre-

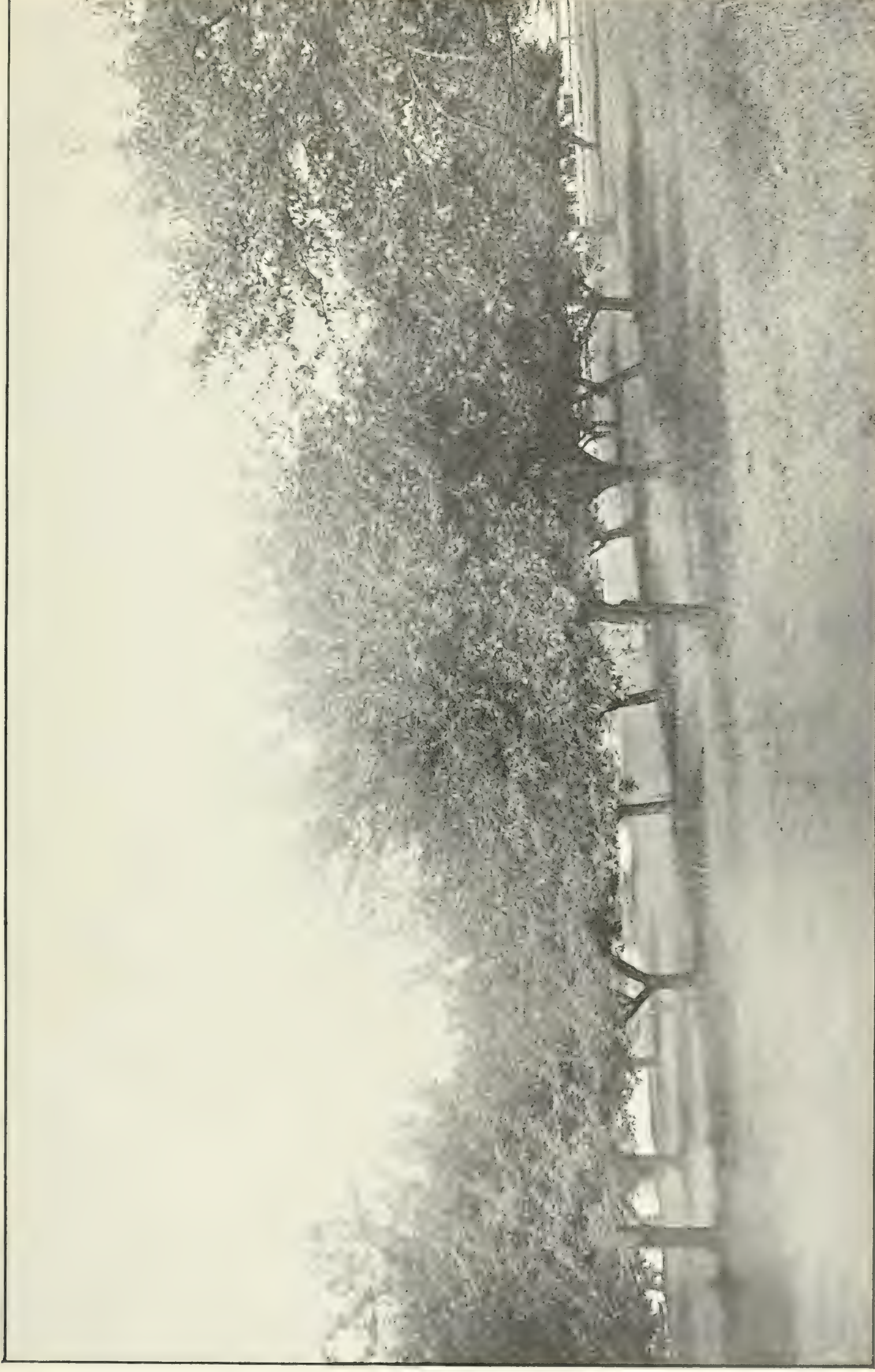
‡ Section 329 refers to the offence of altering or effacing marks after inspection.



FIG. 1. One of the few remaining French pear trees on the Canadian side of the Detroit River reputed to have been planted by the Jesuit Fathers who first explored this district. This tree is eighty feet high and bears abundant crops of fruit.



FIG. 2.—Picking Gravensteins in Nova Scotia.



An Apple Orchard 75 miles below Quebec City.

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quently five or six cents per box at the canneries. This relieved the situation, and on the whole the small fruit growers had a prosperous season.

The tree fruits blossomed freely, and all kinds promised a full crop, with the possible exception of peaches.

The weather during the month of June proved very favourable on the whole for fruit, and trees of all kinds rapidly recovered from the check which they received by the late spring.

The general outlook for apples was a light or medium crop of early and fall fruit, with better prospects for the winter fruit. July and August proved very dry in Ontario, so that the prospects at the end of August showed a decline over the previous months. Fortunately rain fell during September, relieving the gloomy outlook; and though the fruit did not develop to the usual size, it was nevertheless comparatively bright and clean.

Apples coloured well towards the middle of October, and everything promised not only a fair yield of winter fruit, but fruit of good colour and fair quality, though lacking in size. Unfortunately, on the 20th and 21st of October there was a very serious frost that caught fully 50 per cent of the winter fruit in Ontario. Where the apples were left upon the trees undisturbed until the frost had left the apples, the evil results were not directly apparent. Many packers made the mistake of handling their apples while still frozen. In all such cases the results were disastrous. Of course the keeping qualities of the apples frozen on the trees proved poor, and this helped to swell the large number of slacks and shakes so conspicuous in this year's business.

On October 8 a terrific wind storm swept over the Annapolis Valley in Nova Scotia and fully one-third the apples were shaken from the trees. Many of these were so slightly injured that it was impossible to distinguish clearly between the windfalls and hand-picked apples. Many slightly bruised apples found their way into barrels and afterwards deteriorated rapidly. The rain during the gathering season was excessive in Nova Scotia, and the frost of October 21 also did considerable injury. It was accompanied here by a heavy fall of snow. The winter has been very mild, too mild for long storage. Hence the late winter and spring shipments have shown a very serious percentage of loss.

The fruit crop in the Annapolis Valley proved somewhat better than was expected even from the latest reports, while the fruit was on the trees, and, though prices nominally ruled high early in the season, the fact that many of the speculators failed to pay for their purchases has rendered the season only a moderately good one financially.

FRUIT DISTRICTS IN THE DOMINION.

The value of mapping the Dominion into fruit districts was well demonstrated by the irregularities of the distribution of the apple crop this season. For the purpose of the Fruit Crop Report the Dominion has been divided into ten districts, which may be briefly defined as follows:—

District No. 1.—Counties bordering on Lake Erie.

District No. 2.—Counties on Lake Huron and inland to York county.

District No. 3.—Counties bordering on Lake Ontario north to Sharbot Lake and Georgian Bay.

District No. 4.—Ottawa and St. Lawrence valleys to Lake St. Peter and southwestern Quebec.

District No. 5.—New Brunswick with northeastern Quebec.

District No. 6.—Hants, King's, Annapolis and Digby counties, Nova Scotia.

District No. 7.—Nova Scotia not included in District 6.

District No. 8.—Prince Edward Island.

District No. 9.—Lower mainland and islands, British Columbia.

District No. 10.—Inland valleys, British Columbia.

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Those who would get full value from any fruit crop report would do well to study closely the nature of the crop in each of these districts. Taking it particularly in connection with the apple crop, it may be said that District No. 1 grows a large quantity of apples of good size, fine colour and excellent quality. Their one defect is that even the winter varieties ripen so early in the fall that they deteriorate very materially before the cold weather of the early winter sets in and, therefore, unless they are placed in cold storage as soon as they are matured in October, they are apt to show a large amount of waste if any attempt is made to keep them during the winter months. The apples, therefore, in this district must all be regarded as fall and early winter varieties, because there are no cold storage facilities to enable the holding of them for winter shipping stock. Consequently, if it should appear that there was a large crop in District No. 1, it would not materially affect the quantity of winter shipping apples, but would be counted in with the fall and early winter apples, no matter what the varieties were. To this we might make the possible exception of such varieties as the Ben Davis, Stark and similar varieties that are very little grown in this district.

District No. 2 grows excellent winter apples. It is far enough north, or the elevation above the sea level is such, that the winter varieties like the Greening, Baldwin, Spy and Russet, ripen just as the early winter sets in; consequently, these varieties may be picked and stored, with advantage, as winter shipping apples.

A very marked peculiarity of the district is that orchards, though numerous, are small. The district is a very large one and apples can be grown to perfection in any part of it; but the farmers are engaged, for the most part, in mixed farming, with a general preference towards a specialty in stock, if anything. The orchards, therefore, are usually not well taken care of, and from the fact that they are small and often some distance apart, it is expensive for the ordinary itinerant buyer to buy and harvest them. In view of this fact, when winter apples are plentiful elsewhere, many portions of this district are not visited by apple buyers; and the crop then goes to the evaporator and, in more cases, to the cider mill, or perhaps, more frequently still, is used locally or fed to stock.

At three or four points selling associations have been formed, and wherever these have been organized apple growing is exceedingly profitable.

In years like the present, when there was a probability of apples being scarce, this whole district was overrun with buyers; and, though the orchards were far apart and small, yet the district is so large that the aggregate of fruit becomes an exceedingly important factor in determining the total quantity of winter apples available from Canada. Should there be a large crop of apples in Europe and the United States, as well as in Canada, next year, it would be a fair inference that very few apples comparatively would be shipped from this district, and the farmers who did sell, except in a few districts where they are organized, would secure very low prices.

The aggregate number of trees in this district, according to the most reliable reports, would be about 2,311,539 trees. Even with a very moderate crop of one barrel per tree, it will be readily understood that high prices will bring out a large quantity of fruit from this district; but it is equally important to bear in mind that, owing to the conditions enumerated above, low prices would fail to get any appreciable quantity even in a year of an average crop.

District No. 3, the Lake Huron and Georgian Bay district, grows an equally good quality of winter apples; but the orchards are larger and the fruit growers are taking better care of them. Pruning, spraying and cultivating are common. The varieties planted are fewer in number and confined almost exclusively to winter apples. The aggregate of trees in this district is about 3,900,000 trees. Even if we were to estimate that the trees gave no larger yield than in District No. 2, the aggregate of fruit suitable for winter shipment might easily double or quadruple that from District No. 2.

Another significant feature that must be taken into account in all future apple reports is that planting is being done quite freely in District No. 3. The number of

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young trees under ten years old probably equals the present plantings. Consequently, each succeeding year there will be a large addition to the aggregate of the crop coming from District No. 3 as the result of new orchards coming into bearing. There will be a tendency, therefore, to underestimate the crop from this district on this account.

District 4 includes the Ottawa and St. Lawrence valleys in Ontario and the counties in Quebec south of the St. Lawrence and as far east as Lotbinière. [This district has a large quantity of apples of the Fameuse and Wealthy type. The climate is too severe for the standard winter varieties grown in Ontario. The varieties, such as the McIntosh Red, Wealthy, Wolfe River and a number of other hardy varieties, are all fall and early winter apples. In estimating the apple crop, therefore, consideration must be given to this fact, that a large crop of apples in District No. 4 will materially affect the market only during the fall and early winter months, and even in such cases the apples grown in this district are more desirable for desert purposes than for cooking purposes. They, therefore, occupy a special position in the market.

[District No. 5 has comparatively few trees. The quantity of fruit raised here is not enough for home consumption, so that it need scarcely be taken into consideration in an estimate of the crop for commercial purposes. This district includes New Brunswick.] The possibilities of orcharding in the St. John valley are so great that there is a probability in the future of having to make a separate division of this part of district 5 to secure greater accuracy in the estimate.

District No. 6 is an exceedingly important one in apple production. It includes the four counties of Hants, Kings, Annapolis and Digby in Nova Scotia. The most probable estimate of the number of trees in these counties is in the neighbourhood of one million.] It would be quite possible then, considering the high state of cultivation in which a large number of the orchards are kept, to have a surplus of five or six hundred thousand barrels for export.

It will be readily seen that this is a very important fruit district in estimating the marketable crop for any particular year. [The Gravenstein forms the largest bulk of their earliest shipments. This variety, however, is being less planted, and the district is becoming more and more confined to the winter shipping varieties. The Blenheim Orange type appears to flourish here better than the varieties so successful in districts 1, 2 and 3. Fortunately these are extremely popular in the English market and, therefore, are always likely to be in good demand.

District No. 7 embraces the rest of Nova Scotia not included in District No. 6. A few isolated and protected valleys, particularly in the county of Lunenburg, are demonstrating their capacity for growing fruit in commercial quantities; but as a whole it may be said that there is not enough winter fruit grown for home consumption, nor is there sufficient quantity to affect appreciably any results obtained from the other divisions.

District No. 8 includes Prince Edward Island. There is a small quantity of early fruit grown here for export, which may increase somewhat in the near future, but is not enough at present to appreciably affect the market. This district still imports winter fruit for home consumption.

District No. 9 includes the valley of the Fraser from Lytton southward, the lower coast line and the Island of Vancouver in British Columbia. This is a mild and moist climate, favourable to fruit growing, which is carried on under very different conditions from those prevailing in District No. 10.

District No. 10 includes the interior valleys of British Columbia, which have a comparatively dry, warm climate. Irrigation is required in many of these valleys, and it is therefore desirable that they should be grouped together, inasmuch as though they differ among themselves slightly, yet for commercial purposes the fruit is similar.

Districts 9 and 10 will become in the near future much more important factors in estimating the total crop of the Dominion.

In making an estimate, therefore, of the crop of the Dominion, special attention should be given to the different districts according to the kind of fruit and the season in which it is marketed. If, for instance, an estimate is being made of the apple crop available for shipment up to Christmas, the whole apple crop of District No. 1 and District No. 4 will receive special attention. If prices were specially high at this season of the year, there would be then a tendency to force part of the long-keeping apples of districts 2, 3 and 6 on the market immediately. If prices in the summer and fall months were low it is probable that some of the apples of districts No. 1 and No. 4 would be held for early winter shipments. If an estimate were being made of the good winter shipping stock of the Dominion, special attention would be given to Districts 2, 3 and 6.

The commercial pear and peach crop would be largely in District No. 1, with, however, a few commercial pear orchards in districts 2 and 3.

The commercial plum crop is conned largely to districts 2 and 3.

The commercial peach and grape crop is confined entirely to District No. 1 and, indeed, to two or three counties in this district.

The small fruit for commercial purposes is grown very generally in all the districts, but larger plantations are in Districts 1, 2 and 3 and District 6 is increasing the acreage of small fruit very rapidly.

Districts 9 and 10 have so far affected only their local markets and the markets of the Northwest to a limited extent. Their capacity, especially for small fruit, is such that they can easily, in a few years, have a very marked effect upon the markets of Manitoba, Saskatchewan and Alberta.

It will thus be seen that a simple lumping of the Fruit Crop Reports and striking an average, would by no means give a proper idea of the commercial fruit crop of Canada. The capacity of the different divisions, as well as a general average of the crop, must be taken into account.

The prices for the many kinds of Canadian fruits are determined by the prices in foreign markets. Therefore, in order to arrive at a satisfactory conclusion with reference to prices, the fruit crop of the countries entering into competition with Canadian fruit must be estimated. For practical purposes the crop of Great Britain, our largest foreign market, and the crop of the United States, our largest competitors in that market, will suffice. The fruit crop of Europe, however, does exercise considerable influence and must always be taken into account in any accurate estimate upon which to base prices.

MEETINGS.

A very important feature of the work of the inspectors is their attendance at gatherings of fruit growers, where they are in great demand to explain all features of the Fruit Marks Act, which include the practical work of grading and packing fruit. Meetings have been attended by members of the staff as follows:—

Prince Edward Island.. . . .	12
Nova Scotia.. . . .	26
New Brunswick.. . . .	2
Quebec.. . . .	15
Ontario.. . . .	12

In addition to this, members of the staff attended the annual meetings of the Provincial Fruit Growers' Associations of Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia.

In conjunction with other members of this branch, I attended five meetings in the County of Kent last May. The object of these meetings was to stimulate the dairy and fruit interests. The meetings were all well attended, and much good will result, no doubt.

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During the month of June, I attended a series of twelve meetings in Prince Edward Island. These meetings were purely fruit meetings under the auspices of the Provincial Department of Agriculture. The object of the meetings was to arouse some interest with reference to marketing the fruit already grown on the Island and to make suggestions with reference to the future development of the fruit industry there.

The Island is peculiarly well situated for the growing of certain varieties of apples. The climate is too severe to admit of growing the common winter varieties, but the Duchess, Astrachan, Wealthy, Pewaukee, Alexander and Wolfe River and other varieties of this class, do remarkably well there, and promise to be a remunerative addition to the system of mixed farming practiced on the island.

A scheme was suggested for the co-operative buying of nursery stock, which may be the means of increasing the plantings to some extent for the ensuing year.

I attended the short course in horticulture at Guelph, February 4, 5, 6 and 7, during which demonstrations were given in apple packing in boxes and barrels. I also delivered addresses on the subject of grading and marketing apples. I attended a similar course at Ste. Anne de Bellevue, March 18 and 19. The attendance at both was exceptionally large, and indicated that such courses are likely to be extremely popular.

THE BROWN TAIL MOTH IN NOVA SCOTIA.

In April of 1907 the Brown Tail moth was discovered in Nova Scotia. Measures were immediately taken by Professor Cumming, Secretary of Agriculture for Nova Scotia, to inspect large areas of the province, with the result that the pest was found to be quite generally scattered over Kings, Annapolis and Digby counties. To assist in the work of locating the boundaries within which the insect was to be found and to devise means for its destruction, the Provincial Department of Agriculture asked for the services of Mr. G. H. Vroom, Dominion Fruit Inspector. During the months of April and May and at intervals through the summer, Mr. Vroom was engaged in this work. It is satisfactory to note that the efforts of the Department of Agriculture in conjunction with those of the fruit growers of Nova Scotia are likely to keep this dreaded pest in check.

IDENTIFICATION OF VARIETIES.

A large number of fruit growers took advantage of the facilities we have for naming fruits. This work is much appreciated and very much needed at the present time in connection with the fruit industry of Canada. For the best results, we should have access to a collection of wax models, of the rarer varieties at least.

I have the honour to be, sir,

Your obedient servant,

A. McNEILL,
Chief of Fruit Division.

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CORRESPONDENCE *RE* THE ADMINISTRATION OF THE FRUIT MARKS ACT.*Extracts from Statement re Grading and Marking, sent to the Press in Great Britain.*

In view of certain criticisms which have reached this office concerning the administration of the Fruit Marks Act and the marking and grading of Canadian apples as received in Great Britain during the present season, I desire, as head of the branch of the Department of Agriculture which is charged with the administration of this Act, to make the following statement:

The complaints regarding the grading or marking of Canadian apples this year are confined largely to the question of the size of the apples, and it is alleged that many barrels marked No. 1 should properly have been marked No. 2 on account of the small size of the apples.

The section of the Fruit Marks Act which defines No. 1 grade reads as follows:—

‘Sec. 321. No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in a closed package, upon which package is marked any designation which represents such fruit as No. 1 quality, unless such fruit consists of well grown specimens of one variety, sound, of *not less than medium size* and of good colour for the variety, of normal shape and not less than ninety per centum free from scab, worm holes, bruises and other defects, and properly packed.’

It will be observed that medium sized apples come properly under grade No. 1. That is to say, a package containing only medium sized apples may be correctly marked No. 1 if the apples conform to the requirements in other respects. Those who drew up this definition had in mind the fact that in ordinary seasons there is along with medium sized apples a large proportion of large or very large apples which go to improve the general appearance and character of the No. 1 grade. The past season was an extraordinary one in this respect, as all varieties grown in Ontario and many varieties in Nova Scotia were undersized. Thus many packers who have fully observed the provisions of the Fruit Marks Act in a strict legal sense, have been unable to make as good a showing as usual, although the crop was unusually clean and bright.

As for the administration of the Fruit Marks Act, it is evident from some of the comments received that there is considerable misapprehension on this point as well as in reference to the definition of grades in the Act itself.

In the first place, it should be made clear that there is no attempt made to carry out a general inspection or official grading of all apples. There is no government supervision of the packing, as has been suggested. There are many reasons why it is impracticable to carry out such a scheme, but they need not be given here.

There is this to be said, however, that the staff of inspectors was increased in 1907, and the actual number of packages inspected so far this season is greatly in excess of any previous year. Any suggestion that the enforcement of the Fruit Marks Act, as far as it has ever been undertaken by the Department of Agriculture, has been less vigorous or effective during the present season than in past years is absolutely without foundation.

There is one more point on which there appears to be a misunderstanding. We find that a number of f.o.b. contracts have been made this year in which it has been either stipulated by the purchaser, or promised by the seller, that the apples were to be subject to ‘government inspection,’ &c. A contract

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which rests on such a clause cannot be carried out, because it would be impossible for the government to undertake such inspection or to assume any responsibility in such cases. A definiteness might be given to contracts if it were provided that the apples should be packed and marked according to the definitions and grades as provided in the Fruit Marks Act, but that would not imply government inspection.

Dealers and importers in Great Britain may be assured that the Department of Agriculture is desirous of assisting the trade in every possible way. Suggestions and criticisms are invited, but it is desirable that there should be a clear understanding of the work which is undertaken by the Department.

J. A. RUDDICK,

Dairy and Cold Storage Commissioner.

OTTAWA, Ont., Jan. 13, 1908.

The publication of this statement in the press of the United Kingdom brought out several replies, both direct and in the newspapers.

From Mr. Fred. Pritchard, in Liverpool 'Journal of Commerce, January 31, 1908.

THE GRADING OF CANADIAN APPLES.

To the Editor:

Mr. J. A. Ruddick, the commissioner in Ottawa for dairy and cold storage produce, does not appear to be very happy in his defence of the workings of the Fruit Marks Act, put in operation by his department. Mr. Ruddick also appears to have misquoted himself in his defence of the breaches of that Act, because he distinctly says that if we have no No. 1 apples we must call the second grade No. 1's.

Now, our friends in Malaga, Spain, who send us muscated raisins of No. 1 quality, as designated by the maximum number of crowns on the box, do not go so far as Mr. Ruddick, as when a season happens when the highest grade of raisins are not obtainable, the highest designation of marking is not used. So ought the Canadian Department of Canada to enforce their Act.

I am prepared for Mr. Ruddick's question: 'How do you propose to improve matters?' and I am willing to give him my suggestions as to how the trade in Canada, both to the speculator and the farmer, or, in other words, the taxpayer in the province of Ontario, can be made to bring about a much more profitable industry than that which now exists.

The whole difficulty which the Department of Agriculture has to contend with is one which it has not yet in the slightest degree taken into consideration. It is the ridiculous system of contracting for apples by the orchard in the months of July and August, before either the grower or the buyer can form any conception as to the eventual maturing of such apples, influenced as they are by the climate, hail storms, wind storms, and so forth. Buyers flood the country, and with the wish as father to the thought, they make arrangements in their own mind for apples which are hardly visible on the trees at the time of purchase, to mature and yield them something like 75 to 80 per cent of No. 1 grade, as required by the Fruit Marks Act. Season after season these expectations are not realized, and, as in this season it was easy to make a contract in the month of August for 75 per cent No. 1 fruit, it was difficult in the month of November to buy carloads yielding 40 per cent of No. 1 fruit. How is this difficulty to be done away with? First of all by the exercising of a very strong hand on the part of the Agricultural Department;

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by the continuation of the Act as it is now, but with the insertion that No. 1 ranging in size between $2\frac{1}{2}$ and $2\frac{1}{4}$ inches in diameter, that No. 2's shall not be less than $2\frac{1}{4}$ inches in diameter, and that No. 3's shall be good apples of perhaps some deformity not of great moment to their marketable value, but ranging in size between $2\frac{1}{2}$ and $2\frac{1}{4}$ inches in diameter, and not less. It should also be inserted in the Act that should any barrels be found under a mark which are not in accordance with this Act the entire mark shall be described as falsely branded, as a protection to the trade here and as a benefit to the industry ultimately. Buyers here do not understand thoroughly the intention of the Act, and if they see three or four barrels in a mark branded 'Falsely marked,' they naturally come to the conclusion that this is a guarantee that the balance of the mark is as described on the barrel. As it is true that Canadian inspectors cannot open every barrel, so it is true in a large distributing centre like Liverpool that buyers here cannot open every barrel, and the trouble has only to be faced when these apples come into the hands of their ultimate receivers. I have seen apples in Liverpool this year, and thousands of barrels of them, which for false packing compare very unfavourably with all tricks of marking, the predominance of which some ten or twelve years ago brought about the good intentions of the Canadian government in endeavouring to eliminate the difficulty.

* * * * *

I trust these few remarks from one who has covered the ground for a considerable number of years—who has lost on bad apples, and profited by good ones—will be looked upon as only an endeavour to bring about a better state of affairs. Englishmen are becoming more addicted to the use of good apples, and it appears to me a pity that a profitable industry like this should go from bad to worse, especially in view of the glorious prospects which are before the Canadian apple producer, buyer and dealer, in the system of preference which before long must assuredly enhance the value of this produce.

Yours, &c.,

(Sgd.) FRED. PRITCHARD.

6 Sir Thomas Street, Liverpool,
January 30, 1908.

From Mr. Ruddick in Journal of Commerce, February 13, 1908.

To the Editor:

SIR,—I have received a copy of the *Journal of Commerce* of the 31st ult., containing a communication from Mr. Pritchard in reply to my statement *re* the administration of the Fruit Marks Act and the marking and grading of Canadian apples.

Mr. Pritchard says, 'Mr. Ruddick also appears to have misquoted himself in his defence of the breaches of that Act, because he distinctly says that if we have no No. 1 apples we must call the second grade No. 1's.'

This is such a surprising assertion that I can scarcely believe that Mr. Pritchard intended to be fair when he penned it. I did not defend violations of the Act in my statement, nor did I say if we have not No. 1 apples we must call the second grade No. 1. We recognize the fact that there is a tendency on the part of the growers and packers of apples to grade the best of each season's crop as No. 1, but we have been combating that idea as vigorously as possible, laying down the principle that No. 1 grade, as defined in the Act, is *not* an elastic definition to be varied from year to year. In my communication, which appeared in your issue of the 30th ult., I merely quoted from the

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Act to show that medium sized apples, (i.e., medium size for the variety), may be correctly marked No. 1, if the requirements of the Act in other respects are met, and I pointed out that owing to abnormal conditions this last season, there were practically no larger apples, such as in ordinary years are packed along with those of medium size.

Mr. Pritchard then says, 'The whole difficulty which the Department of Agriculture has to contend with is one which it has not yet in the slightest degree taken into consideration. It is the ridiculous system of contracting for apples by the orchard in the months of July and August,' &c.

We realize quite as fully as your correspondent does that the system which he refers to is a bad one, but I would like to ask, does he seriously mean to suggest that the Department of Agriculture should attempt to dictate to the farmers of Canada as to how, when, or to whom they should sell their produce? Surely not. There is another side to this question, Mr. Editor, and I would like to suggest that as the agents who make these contracts are mostly representatives of the large receivers in Great Britain who furnish the money for the purchase of the apples, it is not unreasonable to look to them for a remedy. These agents are chiefly concerned to secure the quantity of apples that their principals in the old country expect from them. To make sure of this they resort to the pernicious contracting system which Mr. Pritchard very properly condemns. When the fruit is picked, the buyer often finds that while he may have the requisite number of barrels of apples, he is unable to furnish as many properly graded No. 1's or No. 2's as his agreement calls for, and he resorts to overgrading to make up the quantity, and takes the chance of getting the consignment out of the country without examination by the inspectors. If the firms who advance the money would hold their agents responsible for the proper grading and packing of their purchases, instead of expecting the Department of Agriculture to supervise their work, the apple business would be very much improved. It is the policy of the Department of Agriculture to assist in every legitimate way in the promotion of the apple trade, but that does not relieve dealers from their share of responsibility.

I hope this discussion of the question will do good on both sides of the water, and I hope I have made it clear that there is no attempt to defend or offer excuses for violations of the Fruit Marks Act. We desire only to have things put in a proper light.

I may add that since the opening of the present season down to February 10, there have been 40 convictions for violations of the provisions of the Fruit Marks Act and many other cases are pending. The inspectors prosecute every person against whom they find a clear case of violation of the law.

Yours very truly,

J. A. RUDDICK,

Commissioner.

Mr. Ruddick wrote Mr. Pritchard on March 9, and received the following reply:—

From Mr. Pritchard to Mr. Ruddick.

LIVERPOOL, March 23, 1908.

MY DEAR SIR,—Your kind letter of March 29 is a very delightful conclusion to the friendly correspondence we have had through the medium of our *Journal of Commerce*. I thank you most cordially for your kind expression, which I fully reciprocate.

We are entirely in accord with one another that there is something very wrong in the trade. Frankly, the whole difficulty originates with the excess

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of money lent by receivers here to secure large consignments and when speculators with the prospect of making large profits at other people's expense, become possessed of such funds, the result is very readily conceived by those with even a primitive knowledge of the trade.

A point we did not discuss and a further disgrace of 'lump buying' is the relative value of one variety against another—hence 'Ben Davis,' probably the largest crop this season, have hardly on any occasion realized over 15 s. for No. 1, and thousands of barrels are now being sold, as holders have to unload, at 11 s. 6 d. for No. 1; 8 s. 6 d. to 9 s. for No. 2; 7 s. for No. 3. These apples were all 'bulk bought,' and most of them probably cost \$3 cars. Now, had bulk buying not been usual, there was no time during the season that Bens were worth on market quotations more than 50 cents for the fruit, and they are not realizing this now.

Against such shrinkage as this I know how hard it is to make men honest, but I am sure you agree with me that we have in some measure probed the root of the evil.

I am, sir,

Very faithfully yours,

(Sgd.) FRED. PRITCHARD.

REPORT

OF THE

DAIRY AND COLD STORAGE COMMISSIONER

FOR THE

FISCAL YEAR ENDING MARCH 31

1908

PART IV.—EXTENSION OF MARKETS DIVISION.

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*Transportation Facilities—Inspection of Iced Car Services—Butter Temperatures—
Cargo Inspection—The Export Butter Trade—The Export Cheese Trade—The
Export Bacon Trade—The Export Apple Trade.*

PART IV.—EXTENSION OF MARKETS DIVISION.

OTTAWA, March 31, 1908.

J. A. RUDDICK, Esq.,
Dairy and Cold Storage Commissioner,
Ottawa.

SIR,—I have the honour to submit herewith the annual report of the Extension of Markets Division.

During the past year the inspection work of the division has been carried on by about the same staff as heretofore, seven inspectors being employed for the full year and eleven additional inspectors for the period from May 1 to November 30. The distribution of the staff was as follows: Seven cargo inspectors at Montreal; three iced car inspectors at Montreal; three travelling iced car inspectors in Ontario and Quebec; five cargo inspectors at ports in Great Britain.

TRANSPORTATION FACILITIES.

The inspection work referred to in the preceding paragraph has for its main object the improvement of existing transportation facilities for the food products we export, and the Extension of Markets Division has charge of this work because of the fact that one good way of extending the markets for our perishable food stuffs is to so perfect our system of transport that such products as butter, cheese, eggs, fruits and meats may be carried from the initial shipping point to the ultimate market with the least possible risk of deterioration.

The first attempt in this country to provide something better than the ordinary freight car for the transportation of perishable produce was made in 1895, when the Department of Agriculture arranged with the railways to run a special iced car service to Montreal for the carriage of less than carload lots of butter, covering eight routes east and south of Montreal and four routes west of Montreal. From these twelve routes in 1895 an improved service has been extended to 62 routes in 1907, covering about 5,600 miles of railway, over which some fifteen hundred cars were operated.

In 1896 not a single steamer sailing from Canadian ports was equipped with a mechanical refrigerating plant, whereas, during the season of navigation in 1907, there were forty-five steamers so fitted sailing from the port of Montreal with a combined cold storage space of 1,014,157 cubic feet. As these steamers made two hundred and thirty-seven trips in the season, the total cold storage space available was therefore 5,001,819 cubic feet. In addition nineteen steamers with cooled air accommodation of 907,440 cubic feet were in commission last season, the total available cooled air space for the season amounting to 4,119,354 cubic feet. Very great progress has also been made in the direction of improved ventilation in the ordinary holds in the steamers, nearly every steamer engaged on the St. Lawrence route now being fitted with exhaust fans which provide forced ventilation of the holds.

During the year this division has carefully looked after the operation of the iced car services for butter and maintained a close inspection over the loading of all perishable produce shipped from the port of Montreal. In addition our inspectors placed thermographs in the refrigerator chambers and in the ordinary holds in the steamships, in order that we might have records of the temperatures maintained in these different compartments during the voyage. In the old country our inspectors

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attended the discharge of every cargo of Canadian products, reporting their condition, method and manner of discharge, &c. These inspectors also removed the thermograph charts and forwarded them to this office, where copies were made and sent to the steamship agents, the Board of Trade, Montreal, and to the engineers of the steamers concerned. An exact record was also kept of the temperature of a number of packages of butter in each lot loaded into the steamers at Montreal and the temperature of the same packages when discharged on the other side.

INSPECTION OF ICED CAR SERVICES.

From May 1 to October 20, we had three travelling iced car inspectors at work, one in Ontario and two in the province of Quebec. These inspectors travelled on the freight trains carrying the iced cars, taking a different route each week, and reported the conditions under which the butter was hauled from the creamery to the railway stations, the temperature of the butter when loaded into cars, the conditions of the cars and the quantity of ice in them. The packages tested by the inspectors were marked so as to be easily detected at Montreal and re-tested there. At Montreal we had two iced car inspectors employed and a third man during the busiest period. These men were in constant attendance at the railway terminals and examined the butter arriving in the iced cars, noting the temperature of the butter, condition of the packages and cars, quantity of ice in the bunkers, &c. They also kept an eye on the men who unloaded the butter and cheese and were careful to see that no butter was allowed to remain on open platforms where it would be exposed to the sun.

ICED BUTTER CAR SERVICE, SEASON 1907.

During the past season it has been most difficult to maintain a satisfactory iced butter car service. The late spring, the labour difficulties at Montreal and the reduced output of butter all contributed to make the service costly to the government and to militate against its efficient operation. At the beginning of the season the Longshoremen's strike caused the railway companies to put an embargo on the shipment of perishable freight to Montreal. After that was settled the G.T.R. teamsters went on strike and that road promptly re-imposed the embargo on perishable freight from western points, while the C.P.R. attempted to carry their own perishable freight and, from competitive points, that of the Grand Trunk as well. As a result of these unfortunate conditions the iced car service became disorganized and it was not until the latter part of June that the regular schedule was restored. After the service got back to normal conditions the shipments of butter were so light, especially from western points, that often the men at the icing stations thought it unnecessary to completely fill the bunkers, as we recommend, and only partially filled them instead. Owing to our complete system of inspection, however, we were enabled to keep close tab on the different services and to promptly notify the railway companies of any irregularities that existed.

DRAWBACKS IN THE SERVICE.

The cars in use were, generally speaking, of the latest type and were well constructed, but they were not always kept perfectly clean, and were seldom disinfected. The icing facilities, too, at many icing points were of the most primitive nature, involving unnecessary labour and waste of time. A small expenditure in this direction by the railways would often reduce the actual cost of icing and promote despatch. The most serious drawback, however, was the irregularity in the running of the way-freights carrying the iced cars. In some sections these trains were often ten hours late, to the detriment of the butter awaiting shipment at the different stations, especially

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during warm weather. In the districts referred to these way-freights are bound to run irregularly, and it seems to me that one way out of this difficulty would be for the railways to provide small cold storage rooms at the principal butter shipping stations on routes where irregularity in the running time is most marked.

Before closing this general reference to our iced car service I wish to refer briefly to a misconception entertained by a great many shippers and others regarding refrigerator cars. These people apparently make very little distinction between an iced car and a cold storage warehouse equipped with mechanical refrigeration, and imagine they can pile a car full of warm butter or fruit and that after a day or two the goods will come out as cool as the proverbial cucumber. This, of course, is an absolute fallacy. A refrigerator car is simply an insulated box about 31 feet long, 8 feet wide and $6\frac{1}{2}$ feet deep, with an ice-box at each end $2\frac{1}{2} \times 5\frac{3}{4} \times 7\frac{1}{2}$ feet, holding from one and a half to two and a half tons of ice each. As the capacity of the car is thirty tons of freight it is absurd to expect that three tons of ice will remove the heat from a full carload of goods which are packed so closely that there is little chance for the air to circulate. I wish, therefore, to emphasize the fact that all that may reasonably be expected of an iced car is that it shall carry freight at an even cool temperature, provided the goods are in a *cool* condition when loaded into it.

ICED CAR SERVICE FROM WESTERN ONTARIO.

The shipments of creamery butter from western Ontario points were very light last season, many cars running each week with very small loads, and as usual we found it difficult to arrange for a satisfactory service west of Toronto, especially on the Grand Trunk Railway, as there were many branch lines which had to be covered but which did not furnish sufficient butter to permit of the running of a through car to Montreal. A considerable number of cars, therefore, ran only as far as Toronto, where the butter for Montreal was consolidated into one or more cars, and on account of these trans-shipments we were unable to get, at Montreal, the temperatures of all the packages that were marked by our Ontario inspector. The shipments of dairy butter were, as usual, in a warm condition when loaded and undoubtedly raised the temperature of the creamery butter carried with them.

TEMPERATURES OF ONTARIO BUTTER.

In the season of 1907 our Ontario inspector secured the temperatures of 99 packages of butter at shipping points, which were afterwards re-tested at Montreal with the following results:—

Marked Packages of Butter from Ontario, Season 1907.

(Creamery and Dairy.)

Number of cars carrying marked packages.	14
Number of packages tested at shipping points, marked and re-tested at Montreal.	99
Average temperature at shipping points.	61.7 deg.
Average temperature at Montreal.	56.1 “
<hr/>	
Reduction in temperature.	5.6 “

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(Dairy only.)

Number of cars.. . . .	13
Number of packages tested at shipping points, marked and re-tested at Montreal.. . . .	75
Average temperature at shipping points.. . . .	65.3 deg.
Average temperature at Montreal.. . . .	56.8 "
<hr/>	
Reduction in temperature.. . . .	8.5 "

(Creamery only.)

Number of cars.. . . .	6
Number of packages tested at shipping points, marked and re-tested at Montreal.. . . .	24
Average temperature at shipping points.. . . .	50.2 deg.
Average temperature at Montreal.. . . .	53.7 "
<hr/>	
Increase in temperature.. . . .	3.5 "

It will be noted that the average temperature at Montreal was 5.6 degrees lower on both creamery and dairy butter; 8.5 degrees lower on dairy alone, and 3.5 degrees higher on creamery alone. Considering the long haul from western points, the high temperature of the dairy butter when loaded, the frequent opening of the car doors, and trans-shipments en route, I think it will be admitted that the above showing is reasonably satisfactory.

As shown in the foregoing table, the creamery butter was loaded at an average temperature of 50.2 degrees, the tests ranging from 41.3 to 61.3 degrees, and the dairy butter at an average temperature of 65.3 degrees, the tests ranging from 50.7 to 78.0 degrees. The average temperature of the butter from each creamery was as follows:—

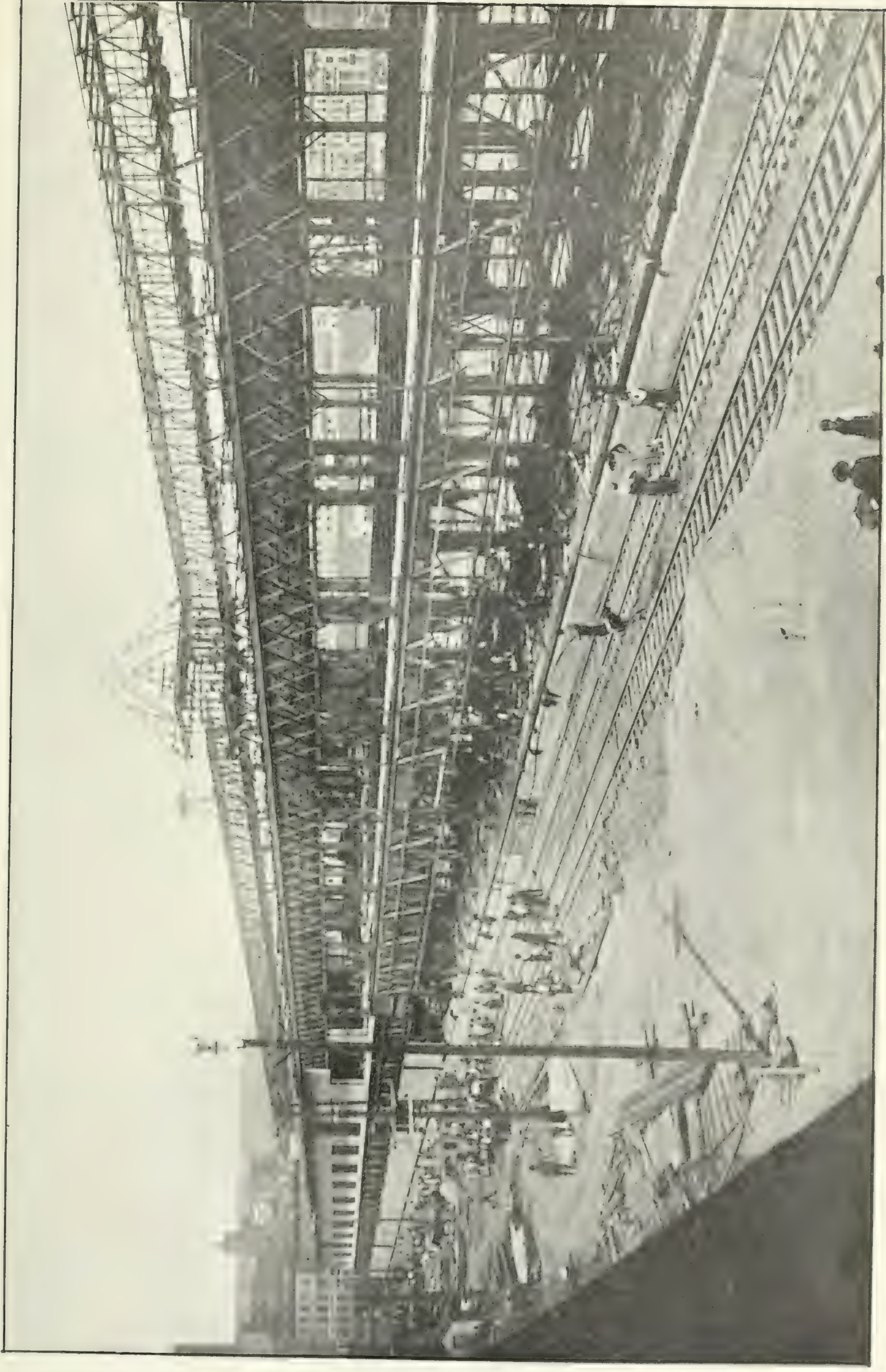
Creamery.	Station.	Number of Packages Tested.	Average Temperature.
			Deg.
O. A. C.....	Guelph.....	4	41.3
Neustadt.....	Neustadt.....	4	42.3
Teeswater.....	Teeswater.....	5	42.8
Dungannon.....	Lucknow.....	6	50.5
Peterboro.....	Peterboro.....	3	53.0
Merlin.....	Merlin.....	4	54.5
Baden.....	Baden.....	6	55.0
New Dundee.....	Petersburg.....	3	61.3

The O. A. C., Neustadt and Teeswater creameries have splendid averages, but Peterboro', Merlin and Baden make a poor showing, while New Dundee is out of the running entirely.

TEMPERATURES OF DAIRY BUTTER.

Out of 105 tests of dairy butter made by our inspector, 92 lots were over 60 degrees, while 20 lots were over 70 degrees.

Creamerymen will no doubt say that this warm dairy butter should not be allowed in the same car with the factory article, because the iced car service was primarily



A wharf shed in course of erection at Montreal.

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intended to encourage the export creamery butter trade. There are two sides to this as to most other questions, however. In the first place, if the loading of dairy butter in these cars was prohibited we would have to cancel the service on many routes where creameries are few and far between, otherwise the deficit the department would have to pay would be extremely heavy; in fact, more than the butter shipped on these routes would be worth. The second and more important consideration is the fact that the bulk of our dairy butter is consumed in this country and, as at present our domestic butter trade is of more importance than our export trade, we are bound to consider it and make some provision for its proper transportation. There is little use, however, in this department providing facilities to transport butter at a temperature of from 45 to 50 degrees if the butter is to be delivered to the cars at a temperature of 70 degrees and over, and it is unfair to the creameryman who has a good cold storage and who is endeavouring to keep his butter at a low temperature to allow warm butter to be placed in a car alongside of his shipment, the temperature of which is raised as a result. Something will have to be done, and I am of the opinion that shippers of dairy butter should be obliged to provide a small cold storage room on the premises where they re-pack and grade their butter, so that it will be reasonably cool when it is handed over to the railway. If this is not done we may yet be compelled to refuse to allow butter of a temperature of say 50 degrees or over to be put into iced cars which are operated under a government guarantee.

TEMPERATURES OF QUEBEC BUTTER.

The following tables show the temperatures of butter at railway shipping points in the province of Quebec during the season of 1907:—

AVERAGE TEMPERATURES OF BUTTER AT QUEBEC RAILWAY SHIPPING POINTS, SEASON 1907.
(INSPECTOR, F. A. KNOWLTON.)

Creamery.	Location.	Railway.	Number of Packages Tested.	Average Temperature.
				deg.
S. B. No. 1.....	Coaticook.....	G.T.R.....	13	36.6
Dunham.....	Dunham.....	C.P.R.....	6	39.0
K 35.....	St. Edwidge.....	G.T.R.....	4	39.5
A 448.....	St. Herménégilde.....	G.T.R.....	4	41.5
W. W. Reed.....	North Hatley.....	B. & M. & C.P.R....	9	41.9
Silver Star.....	Bedford.....	C.P.R.....	6	42.5
Sawyerville Butter Mfg. Co. 629	Sawyerville.....	C.P.R.....	5	43.0
—.....	La Patrie.....	M.C. & C.P.R.....	2	43.0
G				
E. H. Hunter.....	Stanbridge East.....	C.V.R.....	4	43.5
Kingsey.....	Kingsey.....	G.T.R.....	14	43.6
B. M.....	Baldwin's Mills.....	G.T.R.....	8	43.6
G				
—.....	Coaticook.....	G.T.R.....	8	44.6
221				
Waterloo.....	Waterloo.....	C.V.R.....	2	45.0
Hemmingford No. 2.....	Barrington.....	G.T.R.....	3	45.3
Crown.....	Iron Hill.....	C.P.R.....	15	45.5
Magog.....	Magog.....	C.P.R.....	26	45.5
Wayville.....	Wayville.....	B. & M. & C.P.R....	17	45.8
Smith & Juaire.....	Knowlton.....	C.P.R.....	10	46.2
McKay's Creamery.....	Hatley Centre.....	B. & M. & C.P.R....	9	46.3
N. Beaudin.....	Russelltown.....	G.T.R.....	6	46.5
H. J. Allen.....	West Shefford.....	C.P.R.....	18	46.6
Magenta M. 85.....	Magenta.....	C.V.R.....	7	46.6
B. H. Ryder.....	Fitch Bay.....	B. & M. & C.P.R....	3	46.7
Maple Leaf.....	Laroche.....	C.P.R.....	6	46.8
Jas. P. Brown.....	Aubrey.....	G.T.R.....	4	47.0
C. H. Perras.....	St. Chrysostome.....	G.T.R.....	3	47.3
Stanbridge East.....	Stanbridge East.....	C.V.R.....	5	47.5
Daisy A.....	Kingscroft.....	B. & M. & C.P.R....	4	47.5
Dale 17.....	St. Edwidge.....	G.T.R.....	4	47.5
Vale Perkins.....	Vale Perkins.....	C.P.R.....	7	47.9

8-9 EDWARD VII., A. 1909

AVERAGE TEMPERATURES OF BUTTER AT QUEBEC RAILWAY SHIPPING POINTS, SEASON 1907.

(INSPECTOR, F. A. KNOWLTON.)

Creamery.	Location.	Railway.	Number of Packages Tested.	Average Temperature.
				deg.
St. Francis.....	Richmond.....	G.T.R.....	24	48.0
F. & S.....	Hemmingford.....	G.T.R.....	3	48.0
Cowansville.....	Cowansville.....	C.P.R.....	5	48.0
Brome Valley.....	Brome Valley.....	C.P.R.....	4	48.0
Rose II.....	St. Herménégilde.....	G.T.R.....	4	48.0
N. B. 3.....	Franklin.....	G.T.R.....	4	48.0
A. Gerin.....	Coaticook.....	G.T.R.....	12	48.1
B. A. Longdeau.....	Shefford Mountain.....	C.V.R.....	5	48.2
Barnston.....	Barnston.....	G.T.R.....	11	48.2
Mount Orford.....	Cherry River.....	C.P.R.....	24	48.5
Green Valley.....	Mansonville.....	C.P.R.....	10	48.5
J. P. Plothier.....	Kinnear's Mills.....	Q.C.R.....	4	48.5
Melboro Factory.....	Kingsbury.....	O.M. & C.P.R.....	5	48.8
Canadian R. P.....	St. Edouard.....	G.T.R.....	4	49.0
E. McGowan.....	Howick.....	G.T.R.....	4	49.0
O. Roy.....	St. Ephrem.....	Q.C.R. & C.P.R.....	16	49.1
E. Depres.....	Weedon Station.....	Q.C.R. & C.P.R.....	6	49.3
Ayer's Cliff.....	Ayer's Cliff.....	B. & M. & C.P.R.....	18	49.4
Dale 17 (A. Tremblay).....	St. Herménégilde.....	G.T.R.....	7	49.4
C. V. Larose.....	Compton.....	G.T.R.....	12	49.6
Lazure & Lazure (Rose 20).....	Compton.....	G.T.R.....	8	49.8
H. Archambault.....	Farnham.....	C.V.R.....	4	50.0
Maple Leaf.....	St. Remi.....	G.T.R.....	3	50.0
J. Gibson.....	Bromptonville.....	G.T.R.....	6	50.0
G. A. Robb (Reg. No. 21).....	Warden.....	C.P.R.....	5	50.0
Silver Lake.....	Eastman.....	O.M. & C.P.R.....	3	50.0
Riverbank.....	.....	G.T.R.....	4	50.0
J. A. Morrin.....	Bromptonville.....	G.T.R.....	6	50.2
Morrison & Bowen.....	East Hatley.....	B. & M. & C.P.R.....	19	50.5
Katevale T. 66.....	Kateville.....	C.P.R.....	4	50.5
J. E. Dion.....	St. Evariste.....	Q.C. & C.P.R.....	7	50.6
G. Laureau.....	Katevale.....	C.P.R.....	10	50.9
Acme Factory.....	North Stanbridge.....	C.V.R.....	9	51.3
Maple Leaf Factory.....	Maple Leaf.....	M.C. & C.P.R.....	9	51.4
Douglas Corner No. 1.....	Douglas Corner.....	G.T.R.....	8	51.5
A. Poulin.....	St. Evariste.....	Q.C. & C.P.R.....	7	51.7
P. Joliceuer.....	St. Ephrem.....	Q.C. & C.P.R.....	4	52.0
St. Etienne.....	St. Etienne.....	C.P.R.....	6	52.0
J. E. Dion.....	St. Ephrem.....	Q.C. & C.P.R.....	4	52.0
F. W. 103.....	Napierville.....	G.T.R.....	4	52.3
Sherrington.....	Sherrington.....	G.T.R.....	12	52.3
West Dunham.....	Meig's Corners.....	C.V.R.....	9	52.3
Mystic Gem.....	Mystic.....	C.P.R.....	6	52.7
Missisquoi (A. A. Ayer & Co.).....	Frelighsburg.....	C.V.R.....	12	52.8
Holton.....	Holton.....	G.T.R.....	4	53.5
R. Rimme.....	Angeline.....	C.V.R.....	2	54.0
Louis Beaulieu.....	Thetford.....	Q.C.R.....	3	54.0
N. Masse.....	St. Ephrem.....	Q.C. & C.P.R.....	4	54.8
A. Bernard.....	St. Ephrem.....	Q.C. & C.P.R.....	4	54.8
Athelstan.....	Athelstan.....	G.T.R.....	4	55.0
Ormstown (Fulford St. Creamery).....	Ormstown.....	G.T.R.....	2	55.0
G. Roy.....	St. Ephrem.....	Q.C. & C.P.R.....	4	55.0
John Kennie.....	Brooklet.....	G.T.R.....	4	55.8
J. Gauthier.....	St. Ephrem.....	Q.C. & C.P.R.....	4	56.3
J. J. Vanass & Co.....	Wickham.....	C.P.R.....	5	56.8

It will be observed that in 1907 the average temperature ranged from 36.6 degrees to 56.8 degrees. In 1906 the extremes were 38 degrees to 64 degrees, and in 1905, 41.8 degrees to 63.5 degrees. Fifty-one of the creameries tested in 1907 had an average of under 50 degrees as compared with forty-five in 1906 and twenty-eight in 1905.

SESSIONAL PAPER No. 15a

AVERAGE TEMPERATURES OF BUTTER AT QUEBEC RAILWAY SHIPPING POINTS, SEASON 1907.

(INSPECTOR, J. N. LEMIEUX.)

Creamery.	Location.	Railway.	Number of Packages Tested.	Average Tem- perature.
				deg.
E. Lafreniere.....	St. Alexis de Montcalm.....	C.N.Q.R.....	2	39.5
O. Fortier.....	St. Eulalie.....	I.C.R.....	2	42.0
Pierre Proulx.....	St. Agathe de Lotbiniere.....	G.T.R.....	8	42.8
F. X. Bellehumeur.....	Cavignac.....	C.P.R.....	2	43.0
Eug. Côté.....	Isle Verte.....	I.C.R.....	5	43.4
C. Godbout.....	St. Cyprien.....	I.C.R.....	4	43.8
A. Massicotte.....	Joliette.....	C.N.Q.R.....	2	44.0
P. Gauthier.....	St. Luc de Matane.....	I.C.R.....	2	44.0
G. Marion.....	St. Damien.....	C.P.R.....	2	44.5
B. Bergeron.....	St. Samuel.....	I.C.R.....	2	45.0
E. Heon.....	St. Wenceslas.....	I.C.R.....	2	45.5
Omer Hardy.....	St. Sylvere.....	I.C.R.....	2	45.5
Ludger Lomothé.....	Clarenceville.....	Q.M. & S.....	7	46.3
Société de Fleury.....	St. Judes.....	Q.M. & S.....	2	46.5
A. A. Nicole.....	Trois Pistoles.....	I.C.R.....	9	46.6
François Houle.....	St. Narraire.....	I.C.R.....	2	47.0
T. Messier.....	St. Hélène de Bagot.....	I.C.R.....	2	47.0
C. Godbout.....	Isle Verte.....	I.C.R.....	4	47.3
A. Alarie.....	St. Jérôme.....	C.N.Q.R.....	2	47.5
G. Bennett (Hazel Bank).....	New Glasgow.....	C.N.Q.R.....	4	47.5
E. Dumas.....	St. Epiphanie.....	I.C.R.....	6	47.7
Frs. Pelletier.....	Riviere Blanche.....	I.C.R.....	2	48.0
D. Messier.....	St. Hélène de Bagot.....	I.C.R.....	2	48.0
M. Pelletier.....	Joliette.....	C.N.Q.R.....	2	48.0
Geo. Bennett (Elm Bank).....	New Glasgow.....	C.N.Q.R.....	4	48.3
Geo. Bennett (Oak Bank).....	New Glasgow.....	C.N.Q.R.....	2	48.5
Adolphe Charron.....	St. Liboire.....	I.C.R.....	4	48.5
A. A. Nicole.....	St. Simon.....	I.C.R.....	6	48.8
P. Belanger.....	Petit Matane.....	I.C.R.....	2	49.0
David Chapdelaine.....	St. Germain de Grantham.....	I.C.R.....	2	49.0
Pacifique Houle.....	St. Germain de Grantham.....	I.C.R.....	2	49.0
W. H. Wilson.....	St. Sylvester West.....	G.T.R.....	8	49.0
J. O. Nault.....	Portneuf.....	C.P.R.....	5	49.4
Jos. Grenier.....	St. Rosalie.....	C.P.R.....	4	49.5
A. Mercier.....	St. Patrice.....	G.T.R.....	10	49.8
H. Mailhiot.....	St. Gertrude.....	I.C.R.....	2	50.0
Forget & Parthenais.....	Bruchesi.....	C.P.R.....	2	50.0
Eug. Godbout.....	St. Eloi.....	I.C.R.....	4	50.0
Chs. Harvey.....	Amqui.....	I.C.R.....	4	50.0
Jos. Lavasseur.....	Matane.....	I.C.R.....	2	50.0
Clondonier Lussier.....	Rougemont.....	Q.M. & S.....	2	50.0
F. X. Senay.....	St. Cessaire.....	C.P.R.....	2	50.0
D. Metivier.....	L'Ange Gardien.....	C.P.R.....	2	50.0
Albert Houle.....	St. Simon de Bagot.....	C.P.R.....	2	50.0
J. Carpentier.....	Cavignac.....	C.P.R.....	2	50.0
Alph. Masse.....	St. Agathe de Lotbiniere.....	G.T.R.....	8	50.3
C. Godbout (W. 514).....	Isle Verte.....	I.C.R.....	4	50.3
E. Roy.....	St. Clement.....	I.C.R.....	4	50.3
J. B. Theriault.....	St. Modeste.....	I.C.R.....	6	50.3
W. Gareau.....	St. Jérôme Crossing.....	C.N.Q.R.....	4	50.5
M. Brault.....	Montcalm.....	C.N.Q.R.....	4	50.5
A. Sevigny.....	St. Ursule.....	C.N.Q.R.....	2	50.5
J. N. Parent.....	St. Sylvere.....	I.C.R.....	2	50.5
E. Lefebvre.....	St. Hugues.....	C.P.R.....	2	50.5
O. Bernier.....	St. Lin.....	C.P.R.....	5	50.6
Ludger Rioux.....	Trois Pistoles.....	I.C.R.....	7	50.7
L. Eluyer & Chaput.....	St. Elizabeth.....	C.N.Q.R.....	9	50.7
Grenon & Frère.....	St. Bernabé.....	Q.M. & S.....	5	50.8
M. Gauthier.....	St. Germain.....	I.C.R.....	2	51.0
W. Deshaies.....	St. Sylvere.....	I.C.R.....	2	51.0
Nap. Rivard.....	St. Paschal.....	I.C.R.....	2	51.0
C. Thibault.....	St. Luc.....	I.C.R.....	4	51.0
J. Chamberland.....	Sandy Bay.....	I.C.R.....	5	51.0
T. St. Georges.....	St. Ambroise de Kildare.....	C.N.Q.R.....	2	51.0
H. Leroux.....	St. Georges de Montcalm.....	C.N.Q.R.....	2	51.0
E. Dion (E.D.).....	St. Thomas de Joliette.....	C.P.R.....	2	51.0
J. Descelles.....	St. Hélène de Bagot.....	I.C.R.....	6	51.2
J. E. Larose.....	St. Lin.....	C.P.R.....	4	51.3
H. Bergeron.....	St. Paulin.....	C.N.Q.R.....	2	51.5
P. Allard.....	St. Alexis de Montcalm.....	C.N.Q.R.....	2	51.5
P. Savoie.....	St. Nazaire.....	I.C.R.....	4	51.5
P. Lavalle.....	St. Gabriel.....	C.P.R.....	4	51.5
A. Deslandes.....	St. Liboire.....	G.T.R.....	2	51.5
H. Lessard.....	St. Léon.....	C.N.Q.R.....	6	51.5
D. Kerouack.....	St. Narcisse.....	G.T.R.....	12	51.5
E. Dion (G. 618).....	St. Thomas de Joliette.....	C.P.R.....	4	51.5
Arcade Coupal.....	Henryville.....	Q.M. & S.....	7	51.6
C. Godbout.....	St. Eloi.....	I.C.R.....	4	51.8

8-9 EDWARD VII., A. 1909

AVERAGE TEMPERATURES OF BUTTER—*Concluded.*

Creamery.	Location.	Railway.	Number of Packages Tested.	Average. Tem- perature.
A. Drouin.....	St. Sophie.....	C.N.Q.R.....	4	51.8
A. Lapointe.....	St. Paul de Joliette.....	C.N.Q.R.....	6	52.0
H. Lapalme.....	Abbotsford.....	C.P.R.....	2	52.0
E. Metivier.....	St. Cyrille de L'Islet.....	I.C.R.....	2	52.0
A. Breton.....	St. Epiphanie.....	I.C.R.....	6	52.0
J. A. Saindon.....	St. Arsène.....	I.C.R.....	4	52.0
J. St. Pierre.....	St. Rosalie.....	C.P.R.....	2	52.0
Amédée Casavant.....	St. Pie.....	C.P.R.....	3	52.0
Amédée Lapalme.....	St. Hugues.....	C.P.R.....	2	52.0
F. Paradis.....	St. Charles de Joliette.....	C.P.R.....	2	52.0
Edouard Jean.....	St. Fabien.....	I.C.R.....	10	52.3
T. Bergeron.....	St. Thomas de Joliette.....	C.P.R.....	4	52.3
Theo. Beaulieu.....	St. Paul de Croix.....	I.C.R.....	4	52.3
John April.....	St. Hubert.....	I.C.R.....	4	52.3
Laporte & Frère.....	St. Ambroise de Kildare.....	C.N.Q.R.....	5	52.4
I. Dion.....	St. Jérôme.....	C.N.Q.R.....	6	52.5
Jos. Beaulieu.....	St. Flavie.....	I.C.R.....	2	52.5
D. Tetreault.....	Upton.....	G.T.R.....	2	52.5
S. Comtois.....	St. Damien de Brandon.....	C.P.R.....	6	52.5
A. Provost.....	St. Nazaire.....	I.C.R.....	6	52.7
Honoré Charland.....	St. Simon.....	C.P.R.....	3	52.7
W. Ferron.....	St. Léon.....	C.N.Q.R.....	6	52.7
Couture & Frère.....	St. Sébastien.....	Q.M. & S.....	5	52.8
E. Marchand.....	St. Gertrude.....	I.C.R.....	2	53.0
Jos. C. Rioux.....	St. Flavie.....	I.C.R.....	2	53.0
Stephen Benoit.....	Labelle.....	C.P.R.....	2	53.0
Jos. Gaudet.....	St. Marie Salomé.....	C.N.Q.R.....	2	53.0
Comtois & Mondor.....	St. Thomas de Joliette.....	C.N.Q.R.....	2	53.0
Geo. Millar.....	Lisgar.....	G.T.R.....	2	53.0
Jos. A. Desroches.....	St. Beatrix.....	C.P.R.....	2	53.0
G. Roy.....	Montmagny.....	I.C.R.....	4	53.0
A. Leclerc.....	St. Eugene de Grantham.....	I.C.R.....	4	53.3
J. N. Ethier.....	St. Julienne.....	C.N.Q.R.....	3	53.3
Jos. Marion.....	St. Jacques l'Achigan.....	C.N.Q.R.....	2	53.5
Gilbert Brunette.....	St. Liboire.....	G.T.R.....	2	53.5
André Brasseur.....	Emileville.....	C.P.R.....	2	53.5
Frs. Hamel.....	St. Agapit.....	G.T.R.....	10	53.6
S. Comtois (H. 69).....	St. Damien.....	C.P.R.....	6	53.8
J. A. McCallum.....	Danville.....	G.T.R.....	4	53.8
Jos. Lemonde.....	St. Liboire.....	G.T.R.....	4	53.8
O. Gelinas.....	St. Elie.....	C.N.Q.R.....	4	53.8
D. Pelletier.....	Acton.....	G.T.R.....	4	54.0
M. McDuff.....	Upton.....	G.T.R.....	4	54.0
A. Lussier.....	St. Hélène.....	I.C.R.....	4	54.0
O. Bellehumeur.....	St. Hélène.....	I.C.R.....	2	54.0
A. Belzil.....	St. Mathieu.....	I.C.R.....	7	54.0
F. Thibault.....	L'Islet Station.....	I.C.R.....	2	54.0
Dauteuil & Deschenes.....	St. Jean de Dieu.....	I.C.R.....	3	54.0
J. Dumas.....	St. Jean de Dieu.....	I.C.R.....	5	54.0
O. Couture.....	St. Anaclet.....	I.C.R.....	2	54.0
Jos. Gourre.....	L'Epiphanie.....	C.N.Q.R.....	2	54.0
E. Lanthier.....	St. Augustin.....	C.P.R.....	5	54.2
D. Guibault.....	St. Gabriel de Brandon.....	C.P.R.....	7	54.3
H. Lecomte.....	St. Theodore d'Acton.....	G.T.R.....	4	54.3
W. St. Onge.....	Mount Johnson.....	Q.M. & S.....	3	54.3
Riverside Creamery.....	St. Basile.....	C.P.R.....	10	54.4
U. Roy.....	St. Elizabeth.....	C.N.Q.R.....	5	54.4
L. Lussier.....	St. Hélène.....	I.C.R.....	4	54.5
Frs. Robitaille.....	St. Damien de Brandon.....	C.P.R.....	6	54.5
A. L. Heureux.....	St. Norbert.....	C.P.R.....	6	54.5
L. A. Boucher.....	L'Islet.....	I.C.R.....	2	54.5
J. Perron.....	St. Blandine.....	I.C.R.....	2	54.5
Jos. Ancil.....	Riviere Blanche.....	I.C.R.....	2	54.5
J. Jodoin.....	St. Theodore d'Acton.....	G.T.R.....	4	54.5
Syndicat d'Upton.....	Upton.....	G.T.R.....	4	54.5
J. L. Girard.....	St. Angèle.....	Q.M. & S.....	5	54.6
N. St. Louis.....	St. Ursule.....	C.N.Q.R.....	2	55.0
O. Mercier.....	St. Charles de Bellechasse.....	I.C.R.....	2	55.0
E. Dion (A. C.).....	St. Thomas de Joliette.....	C.P.R.....	2	55.0
S. Pellerin.....	St. Beatrice.....	C.N.Q.R.....	2	55.0
P. Theriault.....	St. Alphonse de Joliette.....	C.N.Q.R.....	2	55.0
H. Prevost.....	L'Epiphanie.....	C.N.Q.R.....	2	55.0
M. E. Tremblay.....	Clarenceville.....	Q.M. & S.....	7	55.0
I. Paradis.....	St. Gabriel de Brandon.....	C.P.R.....	11	55.2
A. Rainville.....	St. Gabriel de Brandon.....	C.P.R.....	7	55.3
H. Lafrance.....	St. Joseph.....	C.P.R.....	4	55.3
G. Beauloileil.....	St. Alexis de Montcalm.....	C.N.Q.R.....	4	55.3
A. Gaudreau.....	Trois Sammons.....	I.C.R.....	2	55.5
Marceau & Corriveau.....	St. Vallier.....	I.C.R.....	2	55.5
Jos. Tremblay.....	St. Félicité.....	I.C.R.....	2	55.5

SESSIONAL PAPER No. 15a

AVERAGE TEMPERATURES OF BUTTER—Continued.

Creamery.	Location.	Railway.	Number of Packages Tested.	Average. Tem- perature.
N. Demers.....	St. Giles.....	G.T.R.....	7	55.6
L. P. Paradis.....	St. Raphael.....	I.C.R.....	4	55.8
Boisvert & Gauthier.....	Terrebonne.....	C.P.R.....	2	56.0
D. Brodeur.....	L'Ange Gardien.....	C.P.R.....	1	56.0
Frs. Roy.....	Mount Carmel.....	I.C.R.....	2	56.0
J. D. Blanchet.....	Elgin Road.....	I.C.R.....	2	56.0
Louis Belanger.....	St. Jean Port Joli.....	I.C.R.....	2	56.0
Wilfrid Malo.....	St. Paul de Joliette.....	C.N.Q.R.....	2	56.0
J. A. Allaire.....	St. Roch l'Achigan.....	C.N.Q.R.....	2	56.0
S. Simard.....	St. Agathe.....	C.P.R.....	2	56.0
Georges Vachon.....	St. Valerien.....	G.T.R.....	2	56.0
Syndicat St. Jean Port Joli.....	St. Jean Port Joli.....	I.C.R.....	2	56.0
J. N. O. Fournier.....	St. Magloire.....	I.C.R.....	3	56.0
P. Savoie.....	Upton.....	G.T.R.....	5	56.4
N. Lussier.....	Acton.....	G.T.R.....	5	56.4
Dr. Dubé.....	St. Sylvestre East.....	G.T.R.....	2	56.5
L. J. A. Robillard.....	Laurence.....	C.N.Q.R.....	2	56.5
M. Boucher.....	St. Melanie.....	C.N.Q.R.....	2	56.5
E. Dion (L. C. 81).....	St. Thomas de Joliette.....	C.P.R.....	4	56.8
F. Provost.....	Acton.....	G.T.R.....	7	56.9
E. Descelles.....	St. Theodore d'Upton.....	G.T.R.....	5	57.0
H. Paquette.....	Upton.....	G.T.R.....	4	57.0
E. Blais.....	St. Pierre Station.....	I.C.R.....	4	57.0
Emille Maurice.....	St. Valerien.....	G.T.R.....	2	57.0
Boucher & Mercier.....	St. Francis de Montmagny.....	I.C.R.....	2	57.0
Z. Gauthier.....	Mascouche.....	C.P.R.....	2	57.0
J. A. Ratté.....	St. Paul, Montmagny.....	I.C.R.....	2	57.0
A. Michaud.....	Rimouski.....	I.C.R.....	2	57.0
Pierre Langlois.....	St. Angele de Rimouski.....	I.C.R.....	2	57.0
Geo. Bennett (Green Bank).....	New Glasgow.....	C.N.Q.R.....	2	57.0
T. Nicole.....	St. Paul de Montmagny.....	I.C.R.....	4	57.3
J. O. Nault.....	St. Bazile de Portneuf.....	C.P.R.....	5	57.6
N. Dion.....	St. Canute.....	C.N.Q.R.....	4	57.8
J. Fleury.....	St. Léon.....	C.P.R.....	4	57.8
C. Guitard.....	St. Joseph.....	C.P.R.....	4	58.0
Euclide Thinel.....	St. Calixte.....	C.P.R.....	4	58.0
Edmond Belanger.....	Cap St. Ignace.....	I.C.R.....	2	58.0
J. B. St. Pierre.....	St. Philippe de Nery.....	I.C.R.....	2	58.0
F. Caron.....	St. Jean Port Joli.....	I.C.R.....	2	58.0
J. Bernier.....	St. Cyrille de L'Islet.....	I.C.R.....	2	58.0
J. Dupont.....	St. Helene.....	I.C.R.....	2	58.0
J. A. Charrier.....	Buckland.....	I.C.R.....	2	58.0
D. Lorraine (St. J.).....	St. Janvier.....	I.C.R.....	2	58.0
C. Gravel.....	L'Assomption.....	C.P.R.....	6	58.2
P. Kerouack.....	St. Eugene de L'Islet.....	I.C.R.....	2	58.5
Luc Bellemare.....	St. Barnabé.....	C.N.Q.R.....	4	58.5
E. Dion (D. I.).....	St. Thomas de Joliette.....	C.P.R.....	2	58.5
Wm. Girard.....	Acton.....	G.T.R.....	4	59.0
E. Dubé.....	Cabane Ronde.....	C.P.R.....	2	59.0
A. A. Nicole.....	St. Cyprien.....	I.C.R.....	3	59.0
L. Belanger.....	St. Damien.....	I.C.R.....	2	59.0
M. Moody & Sons.....	Terrebonne.....	C.P.R.....	2	59.0
J. Ratelle.....	St. Paul de Joliette.....	C.N.Q.R.....	2	59.0
A. Davis.....	Christieville.....	C.P.R.....	2	59.0
Hardy Frères & Cie.....	Pont Rouge.....	C.P.R.....	10	59.3
M. Vezina.....	Cap Sante.....	C.P.R.....	4	59.3
J. W. Campton.....	Shawbridge.....	C.P.R.....	6	59.3
O. Cardinal.....	St. Roch l'Achigan.....	C.P.R.....	4	59.3
E. Brosseau (E. B. S).....	St. Adele.....	C.P.R.....	6	59.3
J. G. Heroux.....	Terrebonne.....	C.P.R.....	4	59.5
D. Lorraine.....	St. Janvier.....	C.P.R.....	2	59.5
Boisvert & Domaine.....	Caxton.....	C.P.R.....	2	59.5
Vezina & Mathe.....	Cap Sante.....	C.P.R.....	4	60.0
G. Fournier.....	Montmagny.....	I.C.R.....	2	60.0
Aug. Pelletier.....	St. Roch des Aulnaies.....	I.C.R.....	2	60.0
C. S. Painchaud.....	St. Michel de Bellechasse.....	I.C.R.....	2	60.0
Eugene Chorelle.....	L'Epiphanie.....	C.N.Q.R.....	2	60.0
Eustache Menard (1374).....	L'Anse à Giles.....	I.C.R.....	2	60.0
Emile Larin.....	Petite Riviere.....	C.P.R.....	5	60.2
E. E. Wallace.....	St. Lin.....	C.P.R.....	7	60.3
H. Lacasse.....	St. Agathe.....	C.P.R.....	6	60.5
Roch Gamache.....	St. Calixte.....	C.P.R.....	4	60.5
L. E. Cote.....	Montmagny.....	I.C.R.....	2	61.0
Ludger Lecomte.....	St. Francois de Montmagny.....	I.C.R.....	2	61.0
Xavier Blanchard.....	St. Hyacinthe.....	G.T.R.....	2	61.0
E. Boulet.....	St. Vallier.....	I.C.R.....	2	61.0
Z. Cloutier.....	St. Pierre, Riv. du Sud.....	I.C.R.....	2	61.0
E. Cote.....	St. Pierre, Riv. du Sud.....	I.C.R.....	2	61.0
Thos. Lacerte.....	St. Sévere.....	C.P.R.....	2	61.5
H. Lacasse.....	St. Marquerite.....	C.P.R.....	6	61.5

AVERAGE TEMPERATURES OF BUTTER—Continued.

Creamery.	Location.	Railway.	Number of Packages Tested	Average Tem- perature. deg.
Jos. Rocheleau.....	St. Didace.....	C.P.R.....	2	61.5
J. J. Beaugard.....	St. Lin.....	C.P.R.....	2	61.5
O. Bononival.....	St. Barnabé.....	C.N.Q.R.....	2	61.5
Eustache Menard.....	L'Anse à Giles.....	I.C.R.....	2	61.5
Joseph Shaw.....	Lesage.....	C.P.R.....	6	61.8
Philippe Gelinas.....	Charette Mills.....	C.N.Q.R.....	2	62.0
I. Thouin.....	St. Agathe des Monts.....	C.P.R.....	6	62.3
Thos. Binette.....	Chicot.....	C.P.R.....	4	62.5
P. Lavergne.....	Grand Freniere.....	C.P.R.....	4	62.5
Jos. Guilbault.....	Mascouche.....	C.P.R.....	4	62.8
Hardy, Frères & Cie.....	St. Bazile.....	C.P.R.....	4	63.0
Jos. Beaudoin.....	Cabane Ronde.....	C.P.R.....	2	63.0
N. Heureux.....	St. Barnabé.....	C.N.Q.R.....	2	63.0
E. Brosseau (E. B. 7).....	St. Adele.....	C.P.R.....	6	63.2
J. B. Sansregret.....	St. Paul de Joliette.....	C.P.R.....	4	63.3
J. A. Milot.....	Louiseville.....	C.P.R.....	2	63.5
E. Brosseau.....	St. Sauveur des Monts.....	C.P.R.....	4	63.5
Albert Corriveau.....	St. Boniface.....	C.N.Q.R.....	2	63.5
E. Brosseau.....	Piedmont.....	C.P.R.....	6	64.0
E. Brosseau (E. B. 6).....	St. Jérôme.....	C.P.R.....	6	64.2
H. Lacasse.....	St. Lucie.....	C.P.R.....	4	64.3
A. Legare.....	St. Hippolite.....	C.P.R.....	4	64.5
J. Guertin.....	St. Liboire.....	G.T.R.....	2	65.0
O. Gendron.....	Yamachiche.....	C.P.R.....	5	65.2
Gregoire Belanger.....	St. Sauveur des Monts.....	C.P.R.....	4	65.3
Dionin Milot.....	Yamachiche.....	C.P.R.....	4	65.5
A. Milot.....	Yamachiche.....	C.P.R.....	4	66.0
E. Brosseau (E. B. 5).....	St. Jérôme.....	C.P.R.....	4	66.0
W. Pellerin.....	St. Boniface.....	C.N.Q.R.....	2	66.0
E. Brosseau (E. B. 4).....	St. Jérôme.....	C.P.R.....	4	66.3
J. A. Paquin.....	Louisville.....	C.P.R.....	2	68.0
J. B. St. Pierre.....	Lesage.....	C.P.R.....	2	68.0
C. Robinson.....	Mascouche.....	C.P.R.....	2	68.0

The foregoing table shows that in the season of 1907 thirty-five of the creameries tested shipped their butter at an average temperature under 50 degrees, as compared with eleven in 1906 and none in 1905. In 1907 the lowest average was 39.5 degrees, highest 68 degrees; in 1906 the lowest was 42.4 degrees and the highest 68 degrees; in 1905 the lowest was 51.1 degrees and the highest 67.7 degrees.

As already stated, special marks were placed by the travelling inspectors on a few of the packages of butter tested by them at the railway stations and these packages were again tested at Montreal, in order to ascertain if the butter had become cooler or warmer while in the car. These tests have been carefully calculated and the average temperatures worked out as shown in the following table:—

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SEASON OF 1907.

	No. of Cars with Marked Packages.	Number of Marked Packages Tested at Shipping Points and at Montreal.	Average Temperature at Shipping Points.	Average Temperature at Montreal.	Increase in Temperature	Reduction in Temperature
			Deg.	Deg.	Deg.	Deg.
Ontario via C.P.R.....	2	15	69.1	61.2	.....	7.9
" " G.T.R.....	13	87	60.4	55.6	.....	4.8
Quebec (north of St. Law- rence) via C.P.R.....	11	157	51.5	49.6	.....	2.0
Quebec (south of St. Law- rence) via C.P.R.....	19	224	47.7	48.9	1.2	.....
Quebec via G.T.R.....	17	192	49.0	53.7	4.7	.....
" " I.C.R.....	9	142	50.4	50.4	.....	.....
" " Q.C.R.....	3	62	51.6	51.4	.....	0.2
" " C.V.R.....	3	44	50.0	54.9	4.9	.....
" " Q.M. & S.....	4	32	51.8	51.9	0.1	.....
" " C.N.Q.R.....	5	92	51.7	49.9	.....	1.8
Totals.....	86	1,047				
General average....			51.3	50.5	.....	0.8
Season, 1906, gen'l average			52.6	53.2	0.6	.....
" 1905 "			54.4	54.5	0.1	.....

During the season the two inspectors stationed at Montreal inspected and reported upon 1,044 cars, giving the number of packages of butter in each car, the weight, the number of packages tested and the average temperature of each. Their work is summarized in the following table:—

	Cars.	Packages.	Lbs.	Tests.	Average Temperature	Average Quantity of Ice per Car.
					Deg.	Lbs.
C. P. R.....	447	100,096	6,270,712	1,760	51.7	514
G. T. R.....	265	55,440	3,576,107	1,233	53.9	515
I. C. R.....	83	32,317	2,074,156	440	51.0	1,275
C. V. R.....	82	17,111	1,067,708	316	54.0	461
C. N. Q.....	94	14,921	1,029,474	553	51.3	377
Q. C. R.....	34	8,239	578,383	166	50.8	520
Q. S. R.....	39	6,487	412,475	144	52.6	637
	1,044	234,605	15,009,015	4,612	52.0	.....

IMPROVED PORT FACILITIES AT MONTREAL.

Several of the new freight sheds were in use for the first time last season and were a great improvement over the old wooden sheds, which necessarily were of temporary construction as they had to be removed at the close of navigation each year on account of the danger from ice in the spring. The new sheds are built on what is called the 'high level piers,' that is on a level with Common and Commissioner streets, and are permanent structures of steel and concrete. They are two stories high and at the time of writing seven have been completed, with as many more under way. The upper story in each shed will accommodate cargo for two steamers, so that when all the sheds are finished it will be possible to have on hand, when navigation opens, cargoes for twenty-eight ships with ample room on the lower floors to handle the inward

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cargoes. Both floors are of concrete. Railway tracks are laid along one side of each shed so that freight can be removed directly from the cars to the sheds instead of having to be carted a considerable distance as was the practice in the past.

A seventy ton floating derrick which can be operated in any part of the harbour will be provided to handle heavy freight and the docks will be equipped with unloading cranes which can be moved in either direction.

Previous to last season each railway company handled its own cars on the harbour front, but last year the new Harbour Board organized a general traffic office to look after the movement of all freight on the wharves. The railway companies turned over the cars to the officer who had charge of this work and he moved them as required. A further improvement contemplated is elevated tracks which would leave the driveways free for foot and vehicle traffic.

When all the new sheds are completed the stevedores will be able to carry on their work to much better advantage and our inspectors will be in a position to ask for a still greater degree of care in the handling of perishable goods.

IMPROVED PORT FACILITIES IN GREAT BRITAIN.

When this department first undertook to inspect the condition of our food stuffs when landed at the principal old country ports the facilities there were vastly different from what they are to-day. At London our butter was delivered to lighters miles down the river, and our cheese at Tilbury Dock, from where they were railed to Commercial Road Station and thence carted to destination. This meant that the cheese were handled five times in thirty-five miles, resulting in great damage to boxes and exposure to heat. Something over two years ago all this was changed and since then our butter and cheese have been discharged at the Surrey Commercial Dock, which is within two miles of Tooley Street, the centre of the dairy produce trade in London. At this dock the butter is delivered direct into a cold storage chamber and the cheese and bacon into cooled air rooms.

Until last season conditions at Liverpool were very unsatisfactory. Our butter was discharged from the steamships into freight sheds on the docks, where it remained in some cases for days before it was removed. Since 1903 our department has been endeavouring to have better facilities provided, and last year our efforts bore fruit, as the Canadian Pacific Railway Company erected a cold storage warehouse of four chambers with a total capacity of 60,000 cubic feet on the dock where their steamers are berthed and in future, as far as the Canadian Pacific Railway line is concerned, the facilities at Liverpool will be similar to those afforded at the Surrey Commercial Dock, London.

At Avonmouth, the port of Bristol, our butter is handled with good dispatch, but at Glasgow I regret to say conditions are not so satisfactory, and there is little prospect of any immediate improvement.

CARGO INSPECTION ON MONTREAL DOCKS.

At the commencement of the season of navigation in 1907, the following letter was sent to each of the steamship agents at Montreal:—

OTTAWA, May 6, 1907.

DEAR SIRs,—I beg to inform you that this department will continue the work of cargo inspection at the Montreal docks during the coming season along lines similar to those followed in former years. Mr. Wm. Macfarlane will again be in charge of the cargo inspectors and will have his office in the Custom House building as heretofore. The duties of the inspectors will be to report the condition of all perishable products when loaded into the steamers,

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the kind of handling these products receive, the parts of the ship in which they are stowed, &c.

Thermographs will also be placed in the cold storage and cooled air chambers and in the ordinary holds with apples and cheese. As soon as these temperature records are received here from the other side copies will be made and forwarded to your office, and copies will also be furnished the chief engineers of the steamships concerned. Tests will also be made of the temperature of the butter when delivered to your ships, and a list of these temperatures handed to the chief engineer before the steamer sails. Special attention will be paid this year to the loading and unloading of perishable goods by carters, as we think there is room for considerable improvement in their work.

I believe that your company appreciates the value of this inspection work, and I take this opportunity of thanking you on behalf of this department for the courtesy with which your dock superintendents and other officials have treated our inspectors in the past and for the support they have given them in their work. This season I trust the same cordial relations will exist between your dock officials and our inspectors.

Yours truly,

(Sgd.) W. W. MOORE,

Chief, Markets Division.

During the season our cargo inspectors closely supervised the handling of perishable freight both in the freight sheds and in the ships, and made full reports on all cargoes shipped during the period of navigation. When the apple-shipping season opened one inspector was detailed to look after the unloading of the cars and he did good work in reporting cases of rough handling by the carters. We submitted reports to the superintendents of the Shedden Forwarding Company and the Dominion Transportation Company, who thereupon notified their teamsters that apples must be handled with the greatest possible care.

As the carters who haul the cheese from the warehouses of the exporters to the docks are often responsible for the breakage of a number of boxes while unloading their teams in the freight sheds, I instructed the inspectors last season to immediately notify the office of the shipper concerned, by telephone, whenever they found a carter unloading his cheese roughly. The same course will be followed this season and if our complaints are promptly followed up by the shippers cases of rough handling by the carters will soon become few and far between.

We continued last season to inspect the discharge of cheese and butter from the river boats at Montreal and found the usual tendency in some of the boats to load dairy produce close to the engine room, where it was liable to become heated. Owing to the efforts of our inspector, however, this practice is being gradually discontinued.

CARGO INSPECTION AT QUEBEC AND HALIFAX.

A cargo inspector was present each time the Empress steamers were loaded at Quebec and one was stationed at Halifax during the winter months to look after the loading of apples and to place thermographs in the steamers carrying fruit. Copies of all thermograph records of temperatures obtained in the Halifax boats were sent to the secretary of the Nova Scotia Fruit Growers' Association and to the interested steamship agents in Halifax.

CARGO INSPECTION IN GREAT BRITAIN.

In Great Britain we maintain a staff of five cargo inspectors the year around, covering the ports of Bristol, Glasgow, Liverpool, London and Manchester. These men

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are on hand while Canadian cargoes are being discharged, and report the condition of the different products. They also test the temperature of the marked packages of butter and remove the thermograph records, which they mail at once to Ottawa.

THE EXPORT BUTTER TRADE.

In the season of 1907 the exports of butter from the port of Montreal showed a great decrease, being only 66,773 packages against 361,400 packages in 1906 and 554,041 packages in 1905. As a consequence of this great shrinkage in our exports the cold storage accommodation in the steamers last season was not used to anything like its capacity, but a splendid service was nevertheless maintained by the different steamship companies.

In order to show the comparative temperatures for the past three years of butter when delivered to the steamers at Montreal and when landed at the port of discharge in Great Britain, the following table is submitted:—

MONTREAL TO LIVERPOOL.

	No. of Packages Tested.	Average Temperature at Montreal.	Average Temperature at Port of Discharge.	Average Reduction in Temperature by Ships' Refrigerators.
		Deg.	Deg.	Deg.
Season 1905.....	843	39.3	24.9	14.4
" 1906.....	456	39.2	21.4	17.8
" 1907.....	183	33.7	23.1	10.6

MONTREAL TO LONDON.

Season 1905.....	859	40.2	26.6	13.6
" 1906.....	527	41.7	20.5	21.2
" 1907.....	217	36.2	15.3	20.9

MONTREAL TO BRISTOL.

Season 1905.....	607	36.9	23.9	13.0
" 1906.....	361	36.9	23.9	13.0
" 1907.....	186	35.4	22.9	12.5

MONTREAL TO GLASGOW.

Season 1905.....	403	35.8	28.7	7.1
" 1906.....	374	35.0	24.1	10.9
" 1907.....	183	35.9	19.2	16.7

MONTREAL TO MANCHESTER.

Season 1905.....	87	34.4	30.4	4.0
" 1906.....	33	41.2	38.8	2.4
" 1907.....	7	40.9	34.0	6.9

It will be noticed that last season, with one exception, the butter was delivered to the steamers at a lower temperature than in previous years and that it was discharged at the ports of London, Bristol, Glasgow and Manchester at a lower temperature than heretofore.

Our Liverpool cargo inspector in his annual report for the year 1907, refers as follows to the trade in Canadian butter:—

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'There has been very little butter shipped to this port during the past season, but it has been in good order and condition. There was a great improvement in taking butter from the quay last season, but there is still room for further improvement in that respect. This should come about next season for there are now plenty of cold stores near the quay and the Canadian Pacific Railway have finished their own cold store. There is still a large percentage of butter coming forward without sacking on the box or tub, and this is a serious mistake, as all butter should be sacked. Butter has been carried at a very low temperature during the last season and has been well looked after generally by the steamship companies.'

Under date of January 31, 1908, our Glasgow inspector made the following comments regarding Canadian butter imports for the season of 1907:—

'The imports of Canadian butter were exceedingly small, being barely 6,000 packages, as compared with over 28,000 during 1906.

'The bulk of the butter was of very fair quality, some being very choice, and gave great satisfaction, the only drawback being that the state of the butter market did not permit of merchants importing Canadian on a profitable basis. I observed one or two parcels which were of too deep a colour and these I afterwards learned were railed to the northeast coast of England, where a deeper shade of colour is demanded than that popular in the Glasgow trade.

'The condition on arrival of imports was good, the shipping companies maintaining a lower temperature in their refrigerators than last season, ranging from 10 to 20 degrees for the bulk, a few only being above these figures. The majority of the packages were sacked, quite 64 per cent being so.

'Still considerable delay in taking delivery from the docks is manifested by some consignees. Of the total imports 1,362 packages lay for 2 days, 192 for 3 days, 673 for 4 days, 22 for 5 days, 65 for 6 days, 93 for 7 days and 100 for 9 days, the latter rising in temperature from 10 to 53 degrees. Other than this total of 2,705 packages the remainder was either lifted the date of discharge or the day following.'

The average price in London for Canadian creamery butter for the seven months, May to November, was 110 shillings, with an average in the Bristol market for the same period of 115 shillings. Since the first of the year almost a butter famine has been experienced in Great Britain owing to the tremendous falling off in imports, chiefly from Australia, the shortage in imports for the year ending March 31 amounting to 4,414 tons compared with the previous year.

The following table shows the average price each week in the London market for Danish, Russian, Australian, New Zealand and Argentine butter for the period from November 28 to March 26.

Week Ending.	Danish. Cwt.	Russian. Cwt.	Australian. Cwt.	New Zealand. Cwt.	Argentine. Cwt.
	s.	s.	s.	s.	s.
December 5th.....	123	110	117	120	.....
" 12th.....	123	110	117	120	.....
" 19th.....	124	110	118	120	.....
" 26th.....	125	112	118	120	.....
January 2nd.....	125	112	118	120	.....
" 9th.....	125	112	118	120	114
" 16th.....	126	112	116	120	.....
" 23rd.....	126	112	118	120	.....
" 30th.....	126	112	118	120	118
February 6th.....	128	120	126	128	.....
" 13th.....	142	130	140	142	140
" 20th.....	153	146	152	154	150
" 27th.....	140	128	140	142	136
March 5th.....	126	116	120	120	120
" 12th.....	127	116	122	124	120
" 19th.....	122	116	118	120	120
" 26th.....	120	113	110	114

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The following table shows the quantities of butter imported into the United Kingdom, from the countries named, for the years 1900 to 1907, inclusive, together with the percentage received from each country each year during the period named. It will be observed that the imports increased by 837,919 cwts. in seven years, and that this increased quantity was practically supplied by Russia, Australia and New Zealand, the former country supplying 15·6 per cent in 1907 against 6·2 per cent in 1900.

BUTTER IMPORTS INTO THE UNITED KINGDOM.
FROM BRITISH TRADE RETURNS, YEARS ENDED DECEMBER 31ST.

From	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Russia.....	209,738	378,452	490,091	484,328	404,717	461,140	606,549	657,649
Sweden.....	196,041	180,212	191,591	212,232	206,791	188,209	182,803	226,740
Denmark.....	1,486,342	1,597,186	1,703,032	1,771,654	1,708,619	1,630,363	1,675,761	1,818,811
Germany.....	36,042	26,983	26,375	12,507	4,080	5,372	10,701	7,297
Netherlands....	282,805	298,912	393,261	343,761	252,262	209,897	195,366	168,496
France.....	322,048	311,601	414,240	454,088	371,061	348,442	319,401	281,306
United States ..	56,046	150,126	54,458	42,405	68,754	84,874	157,312	1,063
Australia.....	353,157	248,168	80,397	121,165	480,778	450,293	545,827	587,923
New Zealand...	163,871	167,343	157,993	249,879	294,982	300,418	311,672	313,863
Canada.....	138,313	215,588	285,765	185,437	268,607	292,117	190,968	34,753
Other countries.	134,113	128,319	177,730	183,238	180,354	176,741	140,898	118,534
Total....	3,378,516	3,702,890	3,974,933	4,060,694	4,241,005	4,147,866	4,337,258	4,216,435
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Russia.....	6·2	10·2	12·3	11·9	9·5	11·1	14·1	15·6
Sweden.....	5·9	5·1	4·8	5·2	4·9	4·5	4·2	5·4
Denmark.....	43·9	43·1	42·8	43·4	40·3	39·3	38·6	43·1
Germany.....	1·1	0·7	0·6	0·3	0·1	0·1	0·3	0·2
Netherlands....	8·4	8·1	9·9	8·5	5·9	5·1	4·5	4·0
France.....	9·5	8·4	10·4	11·2	8·7	8·4	7·1	6·7
United States ..	1·7	4·0	1·4	1·1	1·6	2·0	3·6	.....
Australia.....	10·4	6·7	2·2	3·2	11·3	10·8	12·5	13·9
New Zealand...	4·9	4·5	3·9	6·1	6·9	7·5	7·2	7·5
Canada.....	4·1	5·8	7·2	4·6	6·3	7·0	4·4	0·8
Other countries.	3·9	3·4	4·5	4·5	4·5	4·2	3·5	2·8
Total....	100·	100·	100·	100·	100·	100·	100·	100·

THE EXPORT CHEESE TRADE.

The exports of Canadian cheese for the year ended March 31, 1908, amounted to 189,710,463 lbs., valued at \$22,887,237. These figures show a considerable decrease over those of the previous year. The shrinkage in the exports was caused by the reduced make, due to an unfavourable season, but on the whole the quality was good and high prices were realized throughout the year. Following are the figures showing the quantity and value of cheese exported in the years ended March 31, 1904, 1905, 1906, 1907 and 1908:—

Year ended March 31st.	Lbs.	Value.
1904.....	242,432,366	\$25,975,998
1905.....	216,080,606	19,969,363
1906.....	214,438,960	23,679,419
1907.....	213,614,643	26,160,856
1908.....	189,710,463	22,887,237

Practically no complaints were received from Liverpool, London or Bristol regarding the quality and condition of the cheese and fewer complaints than usual regarding

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broken boxes. With respect to the Glasgow market our inspector there in his review of the season writes as follows:—

‘The quality generally has been fairly satisfactory, but the early season’s cheese came to hand in a very green state and occasioned much loss through extraordinary shrinkage in weight. This circumstance was so much felt in the early season by importers as to determine several to leave the Canadian article severely alone, and similarly retail shopkeepers refused to trade in them. The loss of weight in the cheese when cut in their stores was too pronounced to permit of trading in them at a reasonable profit.’

‘The arrivals this season showed a higher percentage of broken boxes than those of last, due apparently in some cases to the use of not sufficiently seasoned wood in the manufacture, and bad boxing, viz.:—A large number of boxes were badly fitted, being both too wide and often too short. The shipments from several factories continued weekly to arrive with 30 or 50 per cent of the boxes broken. Of such were the “Monalea,” “Apsley,” and “Faraday” factories. A few others commenced badly, but I am glad to report improved throughout the season. The importance of strong and well fitting boxes cannot be too forcibly commended, as intended buyers are always impressed with the appearance of the boxes, and after reaching Glasgow the boxes may be railed several hundred miles.’

CHEESE IMPORTS INTO THE UNITED KINGDOM FROM BRITISH TRADE RETURNS, YEARS
ENDED DECEMBER 31st.

From	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Canada.....	1,511,872	1,547,739	1,709,565	1,848,142	1,900,556	1,858,767	1,925,835	1,698,847
United States..	680,583	540,102	390,479	360,916	224,830	175,256	233,425	114,300
Holland.....	327,382	315,923	284,020	302,503	233,601	214,033	229,343	241,553
New Zealand...	77,617	79,094	51,875	56,339	84,947	78,626	126,216	192,301
Other countries.	108,424	103,979	110,273	126,458	110,363	116,000	123,957	125,234
Total.....	2,705,878	2,586,837	2,546,212	2,694,358	2,554,297	2,442,682	2,638,776	2,372,235
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Canada.....	55.8	59.8	67.2	68.6	74.4	76.1	73.0	71.7
United States..	25.1	20.9	15.3	13.4	8.8	7.2	8.8	4.8
Holland.....	12.0	12.3	11.2	11.2	9.1	8.7	8.7	10.2
New Zealand...	2.9	3.0	2.0	2.1	3.3	3.2	4.8	8.1
Other countries.	4.2	4.0	4.3	4.7	4.4	4.8	4.7	5.2
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The above figures for 1907 show the smallest importation of cheese into the United Kingdom during the past eight years, caused probably by the very greatly increased make of home cheese and a lessened consumption due to high prices.

THE EXPORT BACON TRADE.

The following table, showing bacon imports into the United Kingdom for the years 1900 to 1907 inclusive, together with the percentage supplied by the different countries in those years, is of interest chiefly in showing the strides made by both Denmark and Canada in the export bacon trade; [Denmark increasing her exports from 19.4 per cent in 1900 to 33.6 per cent in 1907, while Canada advanced from 9.4 per cent to 22.4 per cent in the same time.] During the eight year period the total quantity imported annually shows very little variation.

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BACON IMPORTS INTO THE UNITED KINGDOM FROM BRITISH TRADE RETURNS, YEARS ENDED DECEMBER 31ST.

From	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Denmark.....	1,094,626	1,060,909	1,255,627	1,496,101	1,723,884	1,471,687	1,463,880	1,806,934
United States...	3,956,527	4,244,329	3,283,855	2,893,507	2,806,108	2,755,233	2,775,919	2,280,644
Canada.....	529,864	398,697	462,487	665,249	829,883	1,191,390	1,190,524	1,192,401
Other countries.	60,221	68,413	87,735	102,131	92,436	80,650	112,299	85,626
Total.....	5,641,238	5,772,348	5,089,704	5,156,988	5,452,311	5,498,960	5,542,622	5,365,605
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Denmark.....	19.4	18.4	24.7	29.0	31.7	26.8	26.4	33.6
United States...	70.1	73.5	64.5	56.1	51.5	50.1	50.1	42.5
Canada.....	9.4	6.9	9.1	12.9	15.1	21.7	21.5	22.4
Other countries.	1.1	1.2	1.7	2.0	1.7	1.4	2.0	1.5
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

THE EXPORT APPLE TRADE.

The export apple trade for the season of 1907-8 was the greatest on record, the exports for the year ending March 31 amounting to 1,629,400 barrels, valued at \$4,823,645. The season of 1903-4 had been the leader previously, but is now in second place as the following figures show:—

EXPORTS OF APPLES.

Year ended March 31st.	Brls.	Value.
1904.....	1,577,285	\$4,529,500
1905.....	997,488	2,551,474
1906.....	1,280,789	4,217,704
1907.....	998,618	2,702,623
1908.....	1,629,400	4,823,645

Owing to the partial failure of the apple crop in many portions of the United States a very considerable quantity of the early apples grown in Ontario were shipped to Chicago and other western cities, and on account of this movement the shipments of early apples to Great Britain were less than would otherwise have been the case

SHIPMENTS BY PORTS.

The bulk of the apples exported were shipped through the following ports:—

	<i>Barrels.</i>
Montreal, to end of November	614,110
Halifax, to end of March.	367,175
Portland, to end of March.	271,111
St. John, N.B., to end of March.	71,079

The balance of the exports went by way of Boston and New York.

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FROSTED SHIPMENTS.

During the months of December and January the weather was comparatively mild, but very severe frost was experienced during February and the first part of March, which caused damage to apple shipments while in transit from Ontario points to the seaboard. Up to January 25 thirteen cars were reported as containing more or less frosted apples when delivered to the steamship at Portland, while between that date and March 7 sixty-five cars were so reported. These seventy-eight cars contained 13,206 barrels of apples (all of which, of course, would not be frosted), or 5.96 per cent of the total quantity shipped during that period.

According to my reports no frosted apples were received at Halifax, while the Dominion fruit inspector at St. John estimates that 2,715 barrels of frosted apples ex. cars from Ontario points were delivered to the steamers at that port during the season.

HANDLING OF APPLES.

Montreal.—The apples were fairly well handled at Montreal the past season, and when all the new freight sheds are completed the facilities for prompt yet careful handling will be greatly improved.

Halifax.—We had a cargo inspector at Halifax during the apple shipping season, and at its close he reported as follows:—

‘I find the handling of apples very satisfactory; the apples are rolled from the cars to the hatchways and the greatest trouble I have had is keeping the shed floors clean. I have insisted, however, that the shed floors should be kept covered with clean sawdust so that the fruit would arrive at its destination in clean packages. I have found in a few cases very dirty barrels; these must have been dirty on leaving the packing houses, as I was present when they were taken from the cars and found the cars clean. The D. A. Ry. carry most of the fruit from the packing houses to the steamers and in most cases I found the cars in good condition.

‘Most of the apples are handled at night. Special trains are started out in the morning and arrive at the port in the evening, and the apples are taken from the cars as quickly as possible and loaded on the steamers, very often the handlers working all night.

‘The barrels are made of strong spruce and fir staves with six shaved birch hoops, and it is very seldom we see a barrel broken.

‘Most of the apples shipped from this port are carried by the Furness Withy S.S. Co., and I find them very careful in handling and stowing, and they are always willing to give any information required.

‘The C. P. R. and Allan Steamship Companies carry a few apples, and I find their work satisfactory.’

Portland.—This department does not carry on any inspection work at Portland, but the writer generally visits that port once each year. On my last trip, about the first of February, 1908, I found as usual good facilities for the transfer of apples from the cars to the steamers; but the apples were not handled so carefully as at Montreal and Halifax. In view of the fact that there has never been a cargo or fruit inspector stationed at Portland and that there is only the ordinary supervision of the railway and steamship officials to prevent rough handling, it is not to be wondered at that the comparison should be in favour of the two ports mentioned, where, for some years past, this department has carried on, by means of cargo inspectors, a campaign for the better handling of perishable goods.

St. John.—A Dominion fruit inspector was on duty at the port of St. John, N.B., during the winter season, and he reported that the transfer of the apples from the cars to the steamers was carefully carried out under his immediate supervision.

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TENDER FRUITS.

With respect to the exports of tender fruits from Canada in the season of 1907-8, the annual report of our cargo inspector at Glasgow makes the following reference to pears and tomatoes:—

‘The shipments of pears from Canada were on a reduced scale from last season, but Duchess and Anjou were of fine quality and where carried in cold storage were landed in excellent condition. One or two of the later arrivals of Keiffers carried by ordinary storage were over-ripe on arrival and inclined to slight waste.

‘Several trial shipments of tomatoes arrived per cold storage, but came to hand in a somewhat unsatisfactory state, generally a large number per box being soft and inclined to waste. Better results might be obtained by shipping them smaller and greener than packed this season, though I fear in a normal year there does not appear to be much prospect of a profitable trade in importation of the Canadian article to this market from August onwards, as it is then well supplied with the Scotch and English grown tomatoes.’

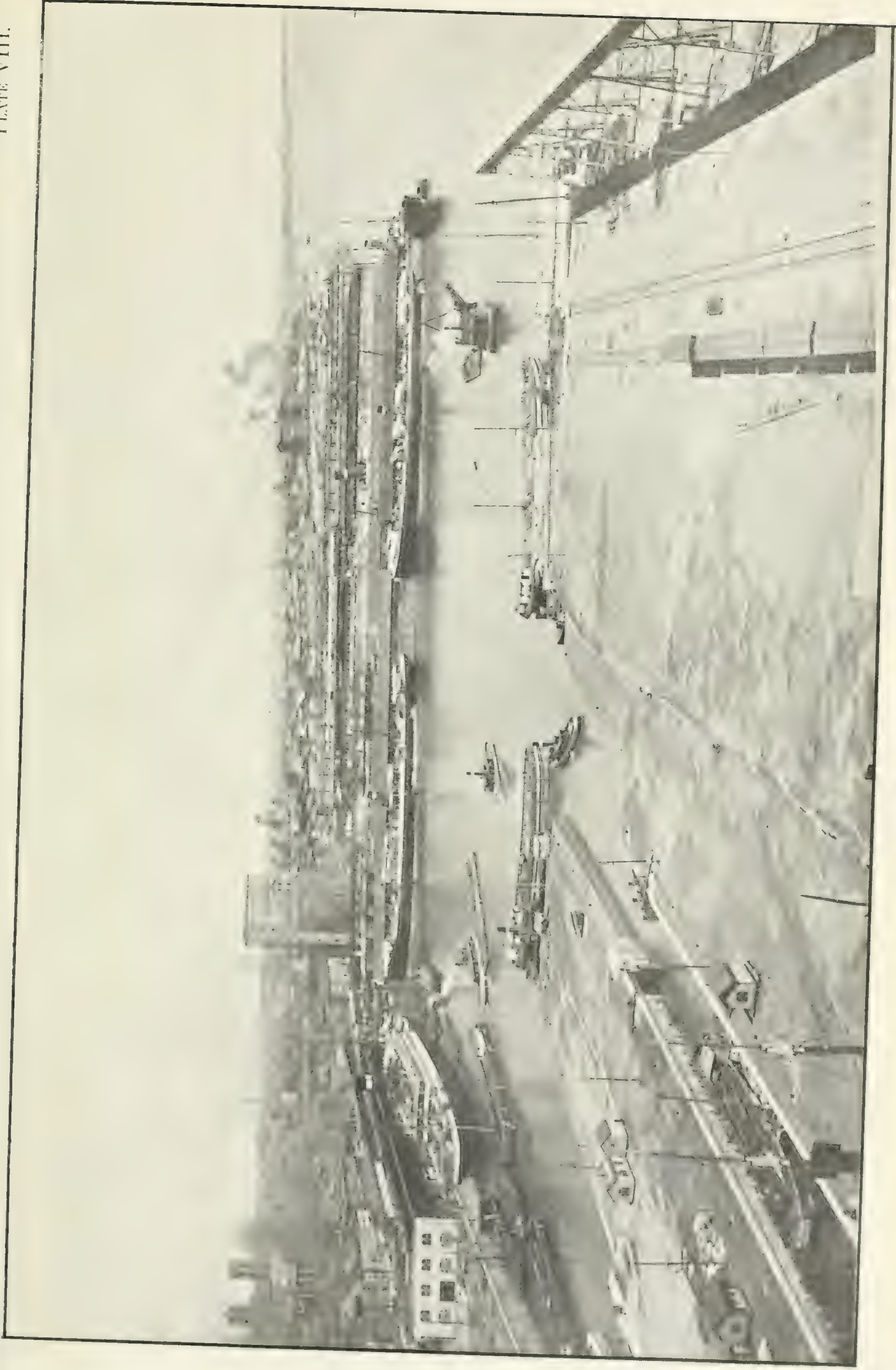
In concluding this report I take pleasure in stating that the inspectors on the staff of this division discharged their duties faithfully and that their work generally was satisfactorily performed.

I have the honour to be, sir,

Your obedient servant,

W. W. MOORE,

Chief, Markets Division.



Montreal Harbour from G. T. R. Elevator.

REPORT

OF THE

DAIRY AND COLD STORAGE COMMISSIONER

FOR THE

FISCAL YEAR ENDING MARCH 31

1908

PART V.—COLD STORAGE DIVISION.

TABLE OF CONTENTS.

Creamery Cold Storages—Iced Car Services—Ocean Cold Storage—List of Steamers with Cold Storage Accommodation—Subsidies for Cold Storage Warehouses—Cold Storage Warehouses in Canada—Cold Storage of Eggs—Cold Storage for Cheese—Cold Storage of Furs.

PART V.—COLD STORAGE DIVISION.

CREAMERY COLD STORAGE BONUSES.

The Department of Agriculture has continued the policy of paying a bonus of \$100 to the owners of creameries who erect and equip a small ice cold storage according to plans and specifications supplied by this branch, and who fulfil the conditions laid down in the following circular:—

DOMINION OF CANADA, DEPARTMENT OF AGRICULTURE, BRANCH OF THE DAIRY
AND COLD STORAGE COMMISSIONER.

To Creamery Owners:

I am directed by the Honourable the Minister of Agriculture to state that Parliament will be asked to extend the bonus of \$100 for cold storage at creameries to the year 1908.

Conditions of Payment.

Payment for the full amount of the bonus will be made at the close of the buttermaking season, upon fulfilment of the following conditions, viz.:—

(1) An efficient cold storage must be built according to plans and specifications supplied, or approved, by the Dairy and Cold Storage Commissioner, Ottawa.

(2) A sufficiently low temperature must be maintained in the cold storage to protect the butter against injury for a reasonable length of time.

Creamery owners desiring to take advantage of this bonus will be required:

(1) To make application before May 1, 1908, on forms provided for the purpose;

(2) To send in a daily record of temperature maintained in the cold storage, once a month during the season.

The construction of the cold storage will have to pass inspection by an officer of the department, or some person designated to make a report on it. The efficiency of the cold storage will be determined by this report and by the monthly reports of temperature.

Inspectors of the Department of Agriculture, Ottawa, must be permitted to examine the construction of the cold storage and to make tests of temperature at any time during reasonable working hours.

The temperature of the butter in any package which has been three days in the cold storage will be taken as representing the average temperatures of the cold storage.

Revised plans and specifications for creamery cold storages, on the 'Air Circulation' system and the 'Cylinder' system, will be furnished on application.

Some experiments in insulation were conducted by the Cold Storage Division in 1905, and as a result of the information thus obtained, we are able

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to recommend a rather cheaper form of construction than has hitherto been considered advisable. The plans have been revised accordingly.

The inspector of creamery cold storages will visit, on request, as far as possible, all creameries applying for the bonus, for the purpose of giving assistance in the planning and construction of the cold storage.

The necessary forms will be supplied, free of cost.

All subject to ratification by Parliament.

Address all communications to the Dairy and Cold Storage Commissioner, Ottawa, Ont.

Yours respectfully,

J. A. RUDDICK,

Commissioner.

OTTAWA, ONT.,

January 13, 1908.

Forms for making application, and blue print working plans, are sent to those who apply for them to the Dairy and Cold Storage Commissioner, Ottawa. During the year ending March 31, 1908, thirty-nine applications were received for this bonus. Thirteen of the applicants failed to comply with the necessary conditions of construction or maintenance, leaving only twenty-six who were entitled to the bonus. Following are the names and addresses of those whose applications were approved of, and to whom the bonus has been paid during the year ending March 31, 1908:—

Nap. Rivard, St. Pascal, Kam., Que.	David Chapdelaine, St. Germain de Grantham, Que.
W. H. Martin, Sec., Baldwin's Mill, Que.	
Rev. Thomas Gravel, Bonaventure River, Que.	Florent Fortier, Ste. Justine de Dorchester, Que.
W. W. Harris, Brussels, Ont.	
N. Beaudin, St. Chrysostome, Que.	The Halton Creamery & Butter Co., Milton, Ont.
Art. Bernier, Cap St. Ignace, Que.	J. E. Pelletier, St. Martin, Beauce, Que.
Aug. Trudel & Frere, Ste. Cecile de Masham, Que.	Frs. Bhreur, Murray Bay, Que.
Fortier & Thivierge, Clarence Creek, Ont.	Babb & Fox, Lucan, Ont.
E. O. Dupuis, Coaticook, Que.	Broel Clouston & Cie, Peribonka, Lac St. Jean, Que.
M. Finn, Delmont P.O., Que.	
H. A. McNeill & Frere, Douglasburg, Que.	James Small, Prescott, Ont.
John Childerhose & Son, Eganville, Ont.	H. E. Reynolds, South Roxton, Que.
Thomas Lavoie, St. Gedeon, Lac St. Jean, Que.	Fortier & Monette, Ste. Therese Jct., Que.
Dieudonne Houle, St. Germain de Grantham, Que.	A. G. Calder, Winthrop, Ont.
	H. de Reinach-Werth, Trochu Valley, Alta.

ICED CAR SERVICES.

The various iced car services which have been in operation now for several years were continued during the season of 1907. It was necessary to re-arrange the iced butter car service, to some extent, in order to avoid excessive loss on the guarantee basis, because of the fact that a number of factories were making cheese instead of butter, and, as a result, the shipments of butter had fallen off considerably on various routes. In other cases, however, the service was extended, and, we think, in many respects, very much improved. As a matter of fact, the temperature records as ascertained by the inspectors in the Markets Division, go to show that the butter is being handled at lower temperatures every year.

The iced cheese cars were continued on the same plan as heretofore. That is to say, the government agrees with the railways to pay icing charges to the extent of \$5 per car on a limited number of cars per week for about ten weeks beginning in July. Cars are supplied by the railway companies on demand of shippers for shipments of cheese in car lots, at regular tariff rates.

The iced fruit car service has not been taken advantage of by the fruit shippers as much as it was expected it would be when it was inaugurated. There has been no

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limit placed on the number of cars, which are supplied in the same manner as the cheese cars are.

A full report of these services, including records of temperature and method of control and inspection, will be found in the report of the Markets Division. (See page 94, Part IV.)

OCEAN COLD STORAGE.

The cold storage facilities provided on the steamships sailing from the port of Montreal, are now so well known, that it is unnecessary to repeat in detail what has so often been told before. There are ample cold storage and cooled air facilities provided for all the perishable products which are offered. As a matter of fact, owing to the falling off in the shipments of butter, one of the greatest difficulties experienced by shippers at the present time, is to be found in the fact that the refrigerators are often not operated, because of lack of freight of the description requiring cold storage. With chambers designed to hold from three to ten thousand packages of butter, one cannot blame the steamship companies if they hesitate to operate the chambers for a few hundred packages, not only because of the expense of operation, but because by putting butter in the chamber, they are prevented from using it for other cargo, and thus the empty space is a dead loss. The steamship companies have shown a desire to meet the needs of the shippers as far as possible, and, on the whole, there appears to have been very little ground for complaint. Large quantities of American produce are offered for shipment in Montreal, on account of the superior facilities offered through the Montreal service. This United States traffic has been a help to Canadian shippers, for without it, the services could hardly have been maintained on their present footing since the exports of butter have fallen off.

PRODUCTS SHIPPED IN COLD STORAGE AND COOLED AIR.

The following figures have been compiled from the reports of the cargo inspectors employed by the Department of Agriculture during the period of navigation at Montreal and Quebec, for the season of 1907:—

	In Cold Storage.	In Cooled Air.
Cheese (boxes).....		290,076
Butter (packages).....	66,896	52
Meats (boxes) —Canadian.....	2,858	29,071
“ “ —U.S.A.....	33,707	11,615
Beef (quarters)—U.S.A.....	4,991	
Lard (packages) —Canadian.....		
“ “ —U.S.A.....	19,635	6,711
Apples (bbis.)—Canadian.....	6,131	1,729
“ (boxes)—Canadian.....	500	3,232
“ (bbis.)—U.S.A.....		
“ (boxes)—U.S.A.....		796
Tender Fruits (boxes) —Canadian.....	751	
“ “ —U.S.A.....	11,118	
Eggs (cases)—Canadian.....		938
“ “ —U.S.A.....	1,436	

The proportion of products carried in cooled air was really much larger than what is shown in these figures, because only those shipments on which the extra freight was paid are included. Many shipments were carried in cooled air at ordinary rates, but in such cases they are shown on the ship's papers as ordinary cargo.

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There are no figures available to show the proportion of the various products carried in cold storage, cooled air and ordinary stowage since the close of navigation in the St. Lawrence, but it may be stated that practically everything is carried in ordinary stowage during the winter months.

BUTTER TEMPERATURES ON BOARD STEAMSHIPS.

During the season of navigation of 1907 the cargo inspectors at Montreal tested the temperatures of 776 packages of butter as these were being loaded into the steamers. After taking the temperatures each package was marked so as to enable the inspector at the port of discharge to get the temperature of the same package as soon as it was unloaded from the steamer. The temperatures for each line have been averaged for the season, and the results are shown in the following table:—

Steamship Line	Number of Sailings with Butter.	Number of Packages Tested.	Average Temperature at Montreal.	Average Temperature at Port of Discharge.	Reduction in Temperature.
Montreal to Bristol—					
Dominion.....	10	112	36.1	22.1	14.0
C. P. R.....	5	74	34.3	23.7	10.5
General average....			35.4	22.9	12.5
Montreal to Glasgow—					
Donaldson.....	14	135	35.2	17.1	18.1
Allan.....	7	48	37.6	23.0	14.6
General average....			35.9	19.2	16.7
Montreal to Liverpool—					
Allan.....	11	110	34.3	21.8	12.5
Dominion.....	7	67	33.2	25.1	8.1
C. P. R.....	1	6	29.7	26.8	2.9
General average....			33.7	23.1	10.6
Montreal to London—					
Allan.....	7	65	33.6	18.1	15.5
Thompson.....	12	152	30.7	20.6	10.1
General average....			36.2	15.3	20.9
Montreal to Manchester—					
Manchester Liners	1	7	40.9	34.0	6.9

If the foregoing records are compared with those in the report for 1907, it will be found that the temperatures were lower at both Montreal and ports of discharge in Great Britain in 1907 than they were in 1906. .

AMOUNT OF COLD STORAGE SPACE AVAILABLE FROM MONTREAL AND QUEBEC DURING THE SEASON OF 1907.

There were 47 steamships sailing from the ports of Montreal and Quebec, for British ports, during the season of 1907, with a total space of 1,014,157 cubic feet for cold storage and 907,440 cubic feet for ‘cooled air.’

Adding together the total sailings for the season, the available space was 5,001,819 cubic feet of cold storage, and 4,248,797 cubic feet of cooled air.

In addition to the services to the United Kingdom there is cold storage on the following lines: (1) to South Africa, (2) to the West Indies, (3) to the Bahamas, Cuba and East Coast of Mexico, (4) to West Coast of Mexico, and (5) to New Zealand.

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SAILINGS OF STEAMERS FROM MONTREAL AND QUEBEC HAVING COLD STORAGE ACCOMMODATION,
SEASON 1907.

Name of Steamer.	Number of Sailings.	Number of Chambers.	Capacity in Cubic Feet.
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ALLAN LINE.

To Liverpool—			
Tunisian.....	7	4	21,650
Victorian.....	7	5	17,260
Virginian.....	8	4	12,440
Ionian (part of season only).....	3	6	13,553
Corsican.....	5	5	24,270
To London—			
Hibernian.....	6	3	7,956
Hungarian.....	5	3	7,124
Ontarian.....	5	4	16,843
Pomeranian.....	5	2	8,056
Sardinian.....	5	2	9,628
Parisian.....	5	1	4,790
To Glasgow—			
Corinthian.....	6	4	16,722
Sicilian.....	6	4	17,980
Pretorian.....	6	6	25,270
Mongolian.....	4	2	8,101
Numidian.....	2	2	8,101
Ionian (part of season only).....	3	6	13,553
Grampian.....	2	5	23,400

CANADIAN PACIFIC LINE:

To Liverpool—			
Lake Erie.....	5	4	21,700
Empress of Britain (from Quebec).....	7	3	29,700
Empress of Ireland (from Quebec).....	7	3	29,700
To London—			
Montrose.....	3	4	23,000
To Bristol—			
Montcalm.....	5	1	15,340
Monmouth.....	4	2	15,400
Montfort.....	5	3	24,700

DOMINION LINE.

To Liverpool—			
Dominion.....	6	4	40,985
Canada.....	5	4	47,915
Kensington.....	6	1	25,867
Southwark.....	6	1	25,313
Ottawa.....	6	2	27,410
Vancouver.....	2	4	14,750
To Bristol—			
Manxman.....	5	3	54,480
Turcoman.....	5	4	38,440
Englishman.....	5	4	37,600

DONALDSON LINE.

To Glasgow—			
Marina.....	6	4	11,719
Parthenia.....	5	4	16,000
Athenia.....	6	4	16,122
Lakonia.....	6	4	14,526
Kastalia (one voyage only).....	1	4	13,498
Cassandra.....	6	3	7,770

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Name of Steamer.	Number of Sailings.	Number of Chambers.	Capacity in Cubic Feet.
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MANCHESTER LINE.

To Manchester— Manchester Trader.....	4	2	5,000
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THOMSON LINE.

To London—			
Cervona.....	5	4	14,321
Devona.....	4	3	21,953
Hurona.....	4	4	20,487
Iona.....	6	4	18,472
Kildona.....	5	3	14,570
Latona.....	5	4	45,682

LEYLAND LINE.

To Hull— Lancastrian.....	2	5	65,040
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SUMMARY.

	Number of Sailings.	Cubic Feet.
To Liverpool.....	80	2,044,724
" London.....	63	1,002,398
" Glasgow.....	59	890,217
" Bristol.....	29	914,400
" Manchester.....	4	20,000
" Hull.....	2	130,080
Totals.....	237	5,001,819

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COOLED AIR SERVICE, 1907.

The following steamships with cooled air service sailed from the port of Montreal during the season of 1907.

Name of Steamer.	Number of Sailings.	Cubic Feet Space.
Allan Line—		
Pomeranian.....	5	26,000
Hungarian.....	5	45,540
Hibernian.....	6	45,540
Ontarian.....	5	19,000
Sardinian.....	5	17,600
Canadian Pacific Line—		
Montcalm.....	5	18,668
Monmouth.....	4	19,443
Dominion Line—		
Southwark.....	6	41,472
Canada.....	5	46,904
Kensington.....	6	42,116
Turcoman.....	1	40,491
Englishman.....	2	18,617
Manxman.....	3	41,585
Thomson Line—		
Iona.....	6	80,178
Cervona.....	5	97,530
Kildona.....	5	79,389
Hurena.....	4	79,707
Devona.....	4	97,574
Latona.....	5	50,086

SUMMARY.

	Number of Sailings.	Cubic Feet.
To Liverpool.....	17	736,048
" London.....	55	3,139,157
" Bristol.....	15	373,592
Totals.....	87	4,248,797

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THERMOGRAPHS IN STEAMSHIPS, SEASON 1907.

During the season 385 temperature records were secured, by placing thermographs (recording thermometers) in cold storage and cooled air chambers, and also in ordinary holds with cheese, meats and apples.

The following table shows the kind of produce which these records cover:—

Placed with.	WHERE PLACED IN STEAMSHIP.		
	Cold Storage.	Cooled Air.	Ordinary Storage.
	Times.	Times.	Times.
Butter	57		
“ and lard.....	10		
“ and frozen pork.....	1		
“ and boxed meats.....	3	2	
“ lard and lumber.....	1		
Apples	7	3	45
“ and cheese.....			7
“ cheese and lard.....			1
“ and soft fruits.....	1		
“ and tomatoes.....	3		
“ and eggs.....			2
“ cheese, eggs and meats.....			1
“ and lard.....			1
“ lard and meats.....			1
“ and meats.....	1		
Cheese	2	18	142
“ and meats.....		26	23
“ and lard.....		1	4
“ apples and meats.....		4	3
“ meats and lard.....	1		
“ and lumber.....			5
Boxed meats	1	2	1
“ “ and fruit.....	3		
Fresh and frozen salmon.....	1		
Pears and plums.....	1		
Total.....	93	56	236

SUBSIDIES FOR COLD STORAGE WAREHOUSES.

Applications for subsidies under ‘The Cold Storage Act’ were received from the following companies or firms:—

The New Brunswick Cold Storage Co., St. John, N.B.; The Scott, Ashton Co., Morrisburg, Ont.; The Edmonton Produce Co., Edmonton, Alta.; Scott & Hogg, Peterboro, Ont.; The Halifax Cold Storage Co., Port Hawkesbury, N.S.; The Canadian Fish & Cold Storage Co., Prince Rupert, B.C. Inquiries have been made by several other firms.

Contracts have been entered into with the New Brunswick Cold Storage Co. and with the Scott, Ashton Co., and others are under consideration.

The Act provides:

(1) The Governor in Council may enter into contracts with any person for the construction, equipment and maintenance in good and efficient working order, of public cold storage warehouses equipped with mechanical refrigeration, in Canada, and suitable for the preservation of all food products.

(2) The Governor in Council may, out of any moneys appropriated by Parliament for the purpose, grant towards the construction and equipment of any such warehouse, a subsidy not exceeding in the whole 30 per cent of the amount expended or approved of in such construction and equipment, and payable in instalments as follows: upon the warehouse being completed and cold storage at suitable temperatures being provided therein, all to the satisfaction of the Minister of Agriculture, a sum not exceeding

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15 per cent of the amount so expended; and at the end of the first year thereafter 7 per cent of the said amount; at the end of the second year thereafter 4 per cent of the said amount, and at the end of each of the two next succeeding years 2 per cent of the said amount: provided the warehouse is maintained and operated to the satisfaction of the Minister of Agriculture.

The New Brunswick Cold Storage Company's warehouse has been completed and the first instalment of the subsidy has been paid. This is a first-class warehouse of approved 'slow burning' construction and well equipped with the most modern machinery. The cost, according to the statement of the company on which the claim for the subsidy is based, is less than 25 cents per cubic foot of refrigerated space. That is a very low cost for a building of its class.

The proposal of The Canadian Fish & Cold Storage Co., is an important one, which if carried out, should help very materially in developing the fresh fish trade of the Pacific coast.

It is probable that the extension of the cold storage business in the near future will be confined largely to centres of production for various products and will be in the hands of those who deal in these goods. The joint management of a warehouse and trading business reduces working expenses and removes any conflict of interest between the owners of the goods and the management of the warehouse.

If the owner of the warehouse is also the owner of the goods in store, he is more likely to give that close attention to operating details which ensures success.

The necessary forms for making application for a subsidy, and full information concerning the payment of subsidies may be obtained from the Dairy and Cold Storage Commissioner, Ottawa.

COLD STORAGE WAREHOUSES IN CANADA.

The following is a list of the public cold storages in Canada as far as replies have been received to a circular which was sent out asking for the information.

Name.	Location.	Capacity of Storage for Butter, Fish, &c.	Capacity of Storage for Cheese, Butter, Fruit, &c.	System of Refrigeration.
		Cubic Feet.	Cubic Feet.	
Manning Cold Storage Co.....	Toronto, Ont.....	50,000	75,000	Mechanical.
The Bay of Quinte Railway Co.....	Deseronto, Ont.....	4,313	9,416	Ice.
The Union Cold Storage Co.....	Montreal, Que.....	175,000	550,000	Mechanical.
The Halifax Cold Storage Co., Ltd.....	Halifax, N.S.....	37,334	None.	Mechanical.
The Canada Cold Storage Co., Ltd.....	Montreal, Que.....	219,616	542,691	Mechanical.
The J. D. Moore Co., Ltd.....	St. Mary's, Ont.....	70,000	70,000	Ice overhead.
A. A. Ayer & Co., Ltd.....	Montreal, Que.....	200,000	500,000	Linde British machines.
Ottawa Cold Stores, Ltd.....	Ottawa, Ont.....	42,900	52,000	Mechanical.
J. B. Jackson.....	Simcoe, Ont.....	1,000	35,000	Gravity brine.
The New Brunswick Cold Storage Co., Ltd.....	St. John, N.B.....	156,000	588,000	Mechanical.
St. Catharines Cold Storage Co.....	St. Catharines, Ont.....		28,000	Mechanical.
The London Cold Storage and Warehous- ing Co., Ltd.....	London, Ont.....	117,000	205,000	Mechanical.
St. Lawrence Produce Co.....	Brockville, Ont.....		50,000	Ice.
R. J. Graham.....	Belleville, Ont.....		165,000	62,560 cu. ft. in ice storage.
			cu. ft. in me- chanical.	
Gunn, Langlois & Co.....	Montreal, Que.....	160 to 125,000	200 to 250,000	Mechanical.
The Gould Cold Storage Co.....	Montreal, Que... about	125,000	475,000	Mechanical.
Lovell & Christmas.....	Montreal, Que.....	65,000	410,000	Mechanical.
Northwest Jobbing and Commission Co., Ltd.....	Lethbridge, Alta.....	2,214	3,316	Mechanical.
Scott & Hogg.....	Peterboro, Ont.....	5,000	43,000	Gravity brine.
The Manitoba Cold Storage Co.....	Winnipeg, Man.....	80,000	110,000	Mechanical.
The B. C. Cold Storage Co.....	Victoria, B.C.....	20,000	15,000	Mechanical.
The Vancouver Ice and Cold Storage Co.	Vancouver, B.C.....	350,000	50,000	Mechanical.
The Pacific Cold Storage Co.....	Dawson, Y.T.....	44,675	9,760	Mechanical.

THE COLD STORAGE OF EGGS.

Cold storage has, during recent years, almost superseded other methods for the preservation of eggs in large quantities. Experience and improved equipment of cold storage warehouses, have combined to produce better and better results, and certain imperfections which have been believed in some quarters to be unavoidable in cold storage eggs are now known to be due to bad management, poor equipment, or the poor quality of the eggs when placed in store. Eggs for long keeping in cold storage, should be gathered during the months of April, May and possibly the early part of June. Earlier eggs are apt to be thin shelled and weak bodied, and after the first few days of June when the weather becomes hot, the eggs deteriorate so quickly that the difficulty of securing them in good condition is very much increased.

A considerable change of opinion has taken place in regard to the minimum temperature for egg storage during recent years. At one time, 40 degrees was considered to be low enough, but the temperature has been gradually reduced, until now the most experienced egg men hold the temperature as low as possible without freezing the eggs. The critical temperature for perfectly fresh eggs is about 27 to 28 degrees, and 29 to 30 is as low as it is practicable to keep the temperature in the egg rooms. Very perfect equipment and exceedingly good insulation are required to maintain a temperature of 29 to 30 degrees without having some part of the room too cold. The indirect or air circulation system is generally approved for the equipment of egg storage rooms, and it is needless to argue that if the insulation is very efficient a smaller amount of refrigeration will be required to maintain the temperature of the room at the desired point, and there will be less difference between the average temperature of the rooms and that of the air at the point where the circulation enters.

It is an advantage also to have the inlets for cold air well distributed, so as to reduce the flow of air at any given point.

In piling the egg cases in a storage room, it is necessary to put dunnage between the different tiers so as to make provision for a free circulation of air among the cases. When eggs are kept at 29 or 30 degrees, it does not seem to be necessary to turn the cases from time to time as it is when the temperature is higher. The low temperature stiffens the white of the egg to such an extent that the yolk is prevented from floating and becoming attached to the shell. In connection with this point, it is also advised that the eggs should be placed in the fillers with the point down, because it is obvious that the yolk in rising will not come in contact with the shell as quickly with the big end up as it would if the point were up. It is very often supposed that the yolk settles in the egg, but being lighter than the white of the egg, the contrary is what occurs.

One of the defects of cold storage eggs in the past has been a tendency to develop mustiness of flavour due to the growth of mould or 'fungus' on the shell. Two conditions which promote the growth of mould are moisture and high temperature. It follows, therefore, that the lower the storage temperature is, and the drier the air in the room is kept, the less will be the trouble from mould, other things being equal. Of course, there is a practical limit to the reduction of the relative humidity, because if carried too far, it will cause excessive shrinkage of the eggs. It is now generally recommended that 75 to 85 per cent of relative humidity is about right at a temperature of 29 to 30 degrees. Where the air circulation system is used, the humidity is controlled, to some extent, by passing the air over expansion coils which are kept continually wet with calcium chloride brine. If this is not sufficient, calcium chloride can be exposed in trays or racks in different parts of the room and for the purpose of absorbing the moisture, the affinity of this salt for water being very great. Some German authorities claim that the calcium chloride has a germicidal effect also, and that the air of the room passing over surfaces wetted with calcium chloride brine, is more or less disinfected.

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A psychrometer should be provided for determining the relative humidity. The sling psychrometer is largely used in the United States. This consists of two accurate thermometers firmly fixed to a frame which is attached to a handle with a swivel so that it can be whirled in the air. The bulb of one thermometer, which should project about one inch below the frame, is covered with a piece of muslin, and before whirling, this bulb is moistened with water at the same temperature as the storage room. After whirling for about half a minute, the readings should be quickly taken. The evaporation of moisture from the muslin covered bulb reduces the temperature on that thermometer, and the drier the room is the more rapid will be the evaporation, and hence the greater the difference in the readings of the two thermometers. Tables are provided for calculating the relative humidity from the difference in the two readings. Another form of the wet and dry bulb thermometer is provided with a device for keeping the muslin constantly wet. These instruments should be fanned vigorously for a half minute before taking the reading.

Only clean, sound eggs will keep satisfactorily in cold storage. It is important that they should be put into store as quickly as possible after they are laid.

The cases and fillers, it is needless to say, should be new and made of odourless material. Many eggs are tainted by 'musty' fillers or fillers which become musty in store.

Any person who uses second-hand cases or old fillers is liable to meet with very much disappointment and financial loss. Care should be taken to see that any material which is used as a cushion for the bottom and top layers of eggs, should be thoroughly dry and free from any signs of mould or 'mustiness.' For that reason, new excelsior is probably the best material to use for that purpose.

Difficulty is usually experienced in removing eggs from low temperatures into the ordinary atmosphere, without injury, especially in climates where the relative humidity is high. The cold egg collects moisture from the air. One plan of avoiding the condensation of moisture is to remove the eggs by successive stages through rooms of different temperature until the outside temperature is approached. Another plan for handling small quantities of eggs, is to bring them into a moderate temperature room a few hours before they are to be taken away from the warehouse, and there they should be covered with a tarpaulin or canvass to prevent the circulation of air in and around them, while they are being warmed to the temperature of the air in the room.

Too much care cannot be given to egg storage rooms to have them thoroughly disinfected every year. As soon as they become empty they should be thoroughly dried by ventilation and heating, if necessary, and then given a good coat of white-wash. For the purpose of thorough disinfection, a scrubbing of the interior surfaces with a solution of one part bi-chloride of mercury (corrosive sublimate) to one part of water, before whitewashing, will thoroughly destroy all spores of mould or other germs.

COLD STORAGE FOR CHEESE.

Cheese is unlike any other product for which cold storage is employed in its preservation. In cold storing butter, meat, poultry, fish or fruit, the object is to preserve them as nearly as possible without change, for the reason that they are at their best when first available either for storage or consumption. Cheese improves with age, under proper conditions, for many months. It is difficult to say how long it will continue to improve. Much depends on the character of the particular cheese, and also on the tastes of the consumer.

The highest type of Cheddar cheese—that which is produced in Great Britain—is never placed in cold storage, but is cured and stored at a temperature of 60 to 65 degrees, and it is at that temperature that the most desirable flavour is developed. In

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Canada the conditions are different, and the temperature which prevails during the summer months, in ordinary cheese curing rooms and warehouses, is too high for good results, as it often rises to 85 or 90 degrees. If cheese is exposed to these high temperatures for a few days only, at any time after it is made, certain ferments are encouraged and developed which, if not checked by comparatively low temperatures, will eventually produce results which are detrimental to the quality of the cheese.

It may be said, therefore, that the temperature at which cheese should be held in a cold storage will depend upon whether such cheese have been cool cured, or have been exposed to unduly high temperatures. Strictly cool cured cheese of good quality should not be stored at temperatures under 55 or 60 degrees. At that temperature the desirable flavours will develop and the texture of the cheese will continue to improve for many months. If cool cured cheese are received into store within a week or two after they are made, it is necessary to allow the ripening to proceed normally for some time, otherwise the cheese may not be in best condition for consumption when required.

On the other hand, if cheese have been exposed to high temperatures, the ripening processes will have proceeded further, as well as those undesirable changes already mentioned, and in order to check these injurious ferments, a comparatively low temperature is necessary, say 36 to 40 degrees, according to the condition of the cheese. A Cheddar cheese will never develop its highest quality at these low temperatures. The flavour will be lacking in that peculiar, rich 'cheesy' quality from which it derives its highest value. It is a case, however, of choosing the lesser of two evils. We cannot secure the fancy quality, but we prevent the serious deterioration in quality, and value, consequent on the development of bad flavours. These remarks apply more particularly to cheese intended for long storage.

One disadvantage attending the storage of cheese at the higher temperature is that they lose much more in weight by the evaporation of moisture than they do at the lower temperature.

COATING CHEESE WITH PARAFFIN WAX.

The shrinkage of cheese while in storage at any temperature may be almost entirely prevented if the cheese are coated with paraffin wax when they are ten days or two weeks old. It will pay to 'paraffin' any cheese which are to be stored for one month or over. (For particulars *re* paraffining cheese see Dairy Commissioner's Report for 1906.)

THE USE OF ICE FOR CHEESE STORAGE.

In view of the comparatively high temperature at which cheese may be stored under certain conditions, the use of ice as a cooling medium should not by any means be considered as obsolete for such a purpose, especially in sections of the country where natural ice is available at a reasonable cost. A basement, fitted with a cement concrete floor, and fairly well insulated walls, may be maintained at a temperature of 50 to 60 degrees with a supply of ice for the season equal to about one ton for every 200 cubic feet of space to be cooled. The cement floor, being a fairly good conductor of heat, acts as a cooling medium down to the point of the constant temperature of the earth underneath, which varies from 50 to 55 degrees. Of course, it follows that if we desire to have a lower temperature, the uninsulated cement concrete is very unsuitable, because as soon as the temperature of the room goes below the constant temperature of the earth, the floor will give off heat, just as it absorbs heat when the room is warmer. Ice storage for cheese is not confined to basement rooms. Any other part of a building, which is on a slightly lower level than the ice chamber so as to permit of a circulation of air, may be used, but a larger amount of ice will be required to keep the temperature down to 55 or 60 degrees where the cement floor lying on the ground is

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not available as an auxiliary cooling medium. Nor is ice storage for cheese limited to temperatures of 55 to 60. If lower temperatures are desired, it is quite practicable to go as low as 38 to 40 or even a degree or two lower in a well built storage and after the cheese have all been cooled off.

Coating cheese with paraffin wax is especially useful in an ice storage, as it prevents the excessive growth of mould, which is favoured by the high relative humidity of ice stores, as a rule.

One of the serious objections to ice storage in the past has been the rapid decay of the insulation and the structural parts of the warehouses, owing to the dampness arising from the melting of the ice. While this weakness, or defect, as it may be called, is more pronounced in some systems than it is in others, it is more or less inseparable from all forms of wood construction, which material has been almost universally used for interior finish of ice storages. There is no reason, however, why the permanent and fire-proof materials now used in the construction of many of the large mechanical plants should not be used for ice storages, especially for the construction of ice chambers. Combinations of sheet cork, asphalt, glazed tile, cement, &c., are now made practically water and damp proof, and although more expensive to install, such materials are durable and sanitary, and probably cheaper in the end than wood. One difficulty in country places where such materials have not yet come much into use is to have them properly erected, but that difficulty will gradually grow less as this use of these materials becomes better known to mechanics and builders.

COLD STORAGE OF FURS AND WOOLLENS.

All goods subject to attacks by 'moths' are absolutely protected from such injury if kept in a temperature under 40 degrees. In large centres of population a profitable trade is being developed in the storage of this class of goods, which includes fur in all forms, woollen clothing, blankets, carpets, rugs, drapery, &c. The cold storage of furs also prevents the deterioration which follows their exposure to a hot, dry atmosphere. The softness, therefore the durability of the skin, and the glossiness of the fur is preserved by low temperatures.

Garments in cold storage are usually suspended on forms without covering, but securely tagged for identification. A very good arrangement for the storage of garments would be to have a series of lockers of suitable size, constructed of heavy wire netting or gratings, which could be rented to customers at a fixed rate.

No attention is necessary during the period of storage, but the warehouseman, in his own interest, should make a careful inspection when the goods are received, and note on the receipt any defect or injury which may be apparent at that time. All goods should be well shaken and brushed before being placed in storage, and all traces of 'moth balls' or other evil smelling substances carefully removed, in order to avoid risk of injury or taint of food products in the same warehouse. A special room should be set aside for this class of custom, if the quantity of goods received will warrant it.

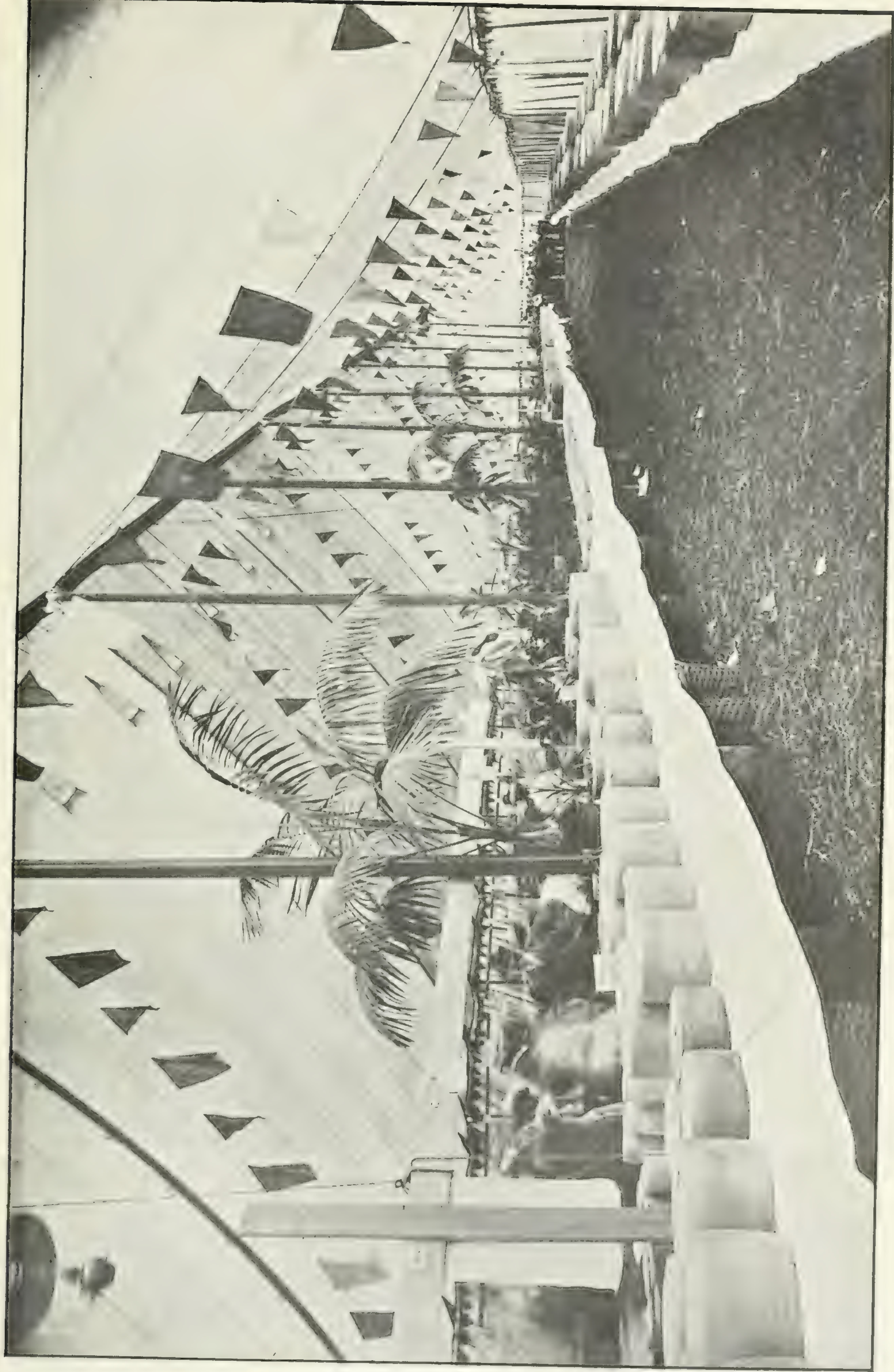
SANITATION IN COLD STORES.

It frequently happens that goods are offered for storage in an advanced state of decomposition and are placed in store simply because they cannot be kept any longer at ordinary temperatures. The deterioration of butter, meat, fish, eggs, &c., when kept at suitable low temperatures, is very much slower if the goods are placed therein in a perfectly fresh condition than it is if the deterioration has reached an advanced stage before they are put in store. For that reason it is highly important that the cold storage manager should take cognizance of the condition of all produce which is offered for storage, and refuse all goods which are already in bad condition. Con-

sumers should not be too ready to blame this process of preservation, unless they know something about the condition of the goods when placed in storage.

There is a prejudice in some quarters against cold storage goods which is unreasonable. There are very few housekeepers in Canada who do not avail themselves of the principles of cold storage every winter. When we place our supplies of meat, milk or cream, in a cool place in order that they may not spoil too quickly, we are utilizing the same agency as the cold storage man does with the goods which are committed to his care. It is a very common practice to buy poultry and meat in the early winter and to keep them in a frozen condition until required for consumption during the winter months. There is no difference in principle between the system of freezing poultry and leaving it out of doors in winter, and in putting it into cold storage in the summer months.

Cold storage sometimes fails to preserve food products in a satisfactory condition, if the sanitation of the warehouse is not properly attended to. The air of cold storage chambers must be changed from time to time and the humidity regulated to avoid excessive growth of mould, and some thorough method of disinfection must be employed to keep the rooms in a sweet and wholesome condition, so that goods stored therein will not be injuriously affected. For this purpose there is nothing better than a liberal use of lime water or whitewash at least once a year on all the interior surfaces of the cold storage rooms. In addition to the purification which is effected with lime, a thorough disinfection of mouldy rooms by washing the walls, ceilings and floors with a solution of bi-chloride of mercury (1-1000) in water, will be found most effective in destroying mould, and it has the further advantage of preserving a wooden structure from decay. It is not the dampness which causes wood to rot, but it is because the dampness favours the growth of mould, which feeds on the wood. Cold storage men have not, as a class, paid sufficient attention to these features of their business. They have accepted without question goods in various stages of decomposition. This brings discredit on the whole question of cold storage. They should bear in mind also that the condition of the goods coming out of store will be very much affected by the sanitary conditions of the rooms in which they are stored.



Cheese exhibit at Shepton Mallet.



Some Dutch Cows.



FIG. 1.—An Edam Cheese Factory.



FIG. 2.—The Cheese Market at Alkmaar.



Two views of a modern Dutch Stable.

REPORT

OF THE

DAIRY AND COLD STORAGE COMMISSIONER

FOR THE

FISCAL YEAR ENDING MARCH 31

1908

PART VI.—VISIT TO GREAT BRITAIN AND HOLLAND.

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*Canadian Produce in Great Britain—Cheesemaking in Somerset—Meetings Addressed
—Canadian Fruit in Great Britain—The Cider Industry—The International
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PART VI.—VISIT TO GREAT BRITAIN AND HOLLAND.

The Branch of the Dairy and Cold Storage Commissioner deals largely with the commercial side of the dairy, fruit and allied industries, and as the export of the products of these industries to Great Britain forms so large a part of the trade in them, it is important that those who direct the work assigned to the branch should keep in close touch with the tendencies and requirements of that market. There is no better way for the head of the branch to secure this desirable information than to make occasional visits to the old country for the purpose of getting into personal touch with importers and others connected with the trade.

An official visit from a representative of the Canadian Department of Agriculture attracts considerable notice, and the occasion is given such publicity through the press that the attention of all readers is drawn to Canadian produce. The knowledge that the Canadian government is looking after these things is an assurance to merchants and consumers, and a material assistance in establishing confidence in Canadian food products.

Arriving in Liverpool on July 27, the writer spent the month of August in visiting the various produce centres, addressing meetings, interviewing merchants and discussing with them the various aspects of the Canadian trade in butter, cheese, fruit and other produce.

CANADIAN BUTTER IN GREAT BRITAIN.

Much disappointment was expressed over the decline in the shipments of Canadian butter, which had reached the point in 1905 where it was beginning to have a distinct place in the British market. If the quantity exported had shown an increase instead of a decline, or if the shipments had even been maintained at the level of 1903-5, the demand for our butter should have shown considerable improvement. As it is now with the insignificant amount shipped in 1907, nobody is taking much interest in it.

A marked feature of the butter trade of the United Kingdom in 1907 was the large increase in the shipments from Australia and Siberia, the supplies from both countries having exceeded those in all previous years. The quantity of Irish creamery continues to increase and to improve in quality, but as it is a home production, the figures do not appear in the Trade and Navigation tables. The importance and volume of the Irish supply is therefore often overlooked. The total value of the Irish butter shipped annually to England and Scotland is variously estimated at from \$20,000,000 to \$30,000,000. About two-thirds of the whole quantity is made in creameries. There are now nearly 900 creameries in Ireland.

THE BUTTER AND MARGARINE ACT.

Much interest was aroused in produce circles over the passage of 'The Butter and Margarine Bill,' a measure which has been before the British Parliament in various forms for many years, but which was always allowed to stand over for various reasons.

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The provisions of the new law, known as 'The Butter and Margarine Act, 1907,' which are of interest to Canadians are as follows:—

PROVISIONS AS TO THE IMPORTATION OF BUTTER, MARGARINE AND MILK-BLENDED BUTTER.

5. (1) There shall be included in the list of articles importation of which is made an offence by section 1 of the Sale of Food and Drugs Act, 1899, the following articles:—

- (e) Butter containing more than 16 per cent of water;
- (f) Margarine containing more than 16 per cent of water, or more than 10 per cent of butter-fat;
- (g) Milk-blended butter containing more than 24 per cent of water;
- (h) Milk-blended butter, except in packages conspicuously marked with such name as may be approved by the Board of Agriculture and Fisheries for the purpose;
- (i) Butter, margarine, or milk-blended butter which contains a preservative prohibited by any regulation made under this Act, or an amount of a preservative in excess of the limit allowed by any such regulation.

CANADIAN CHEESE IN GREAT BRITAIN.

Canadian cheese continues to hold its own in the market. New Zealand shipments of cheese are attracting considerable attention, because it is probable that the quantity imported in 1907-8 will be very nearly double what it was during the season of 1906-7. The actual increase, however, in New Zealand shipments is not expected to be over 100,000 boxes. The quantity is not large enough to seriously affect the market, and not more than the variation in the Canadian output from year to year. (See page 109.)

THE GREEN CHEESE EVIL.

I heard many complaints about the shipping of green cheese, especially from the smaller dealers, who buy only in sufficient quantities to supply their current demands. The large dealers, in some cases, were more or less indifferent on the question, probably because their large stocks enable them to hold such cheese as are not fully matured until they are in better condition for consumption. The idea was advanced in some quarters that the large dealers were encouraging the shipping of green cheese, knowing that the practice if continued would seriously curtail the trade of the smaller dealer, and thus tend to give them (the large dealers) a monopoly of the business. One thing is certain: the consumption of cheese was checked by the shipment of green cheese during the early part of the season of 1907.

CUTTING OF PRICES.

The action of some of the large multiple shop companies in reducing the retail cut of cheese to a price which was lower than that at which the cheese could be purchased in Canada, created considerable stir in certain quarters. This competition was very keenly felt by the small shopkeeper, who must sell his cheese at a profit in order to live. While he was compelled to keep cheese for those who asked for it, the less he sold of it the better off he was, therefore, he kept it under the counter as much as possible. Whether this cutting of prices was the result of competition between the large companies and was adopted by them as a matter of advertising, or whether it was a deliberate attempt to freeze out the smaller shopkeeper, I am unable to say. If continued long enough, however, such a course could not be otherwise than detrimental to the cheese trade, because while the low price has a tendency to encourage consumption on the one hand, the loss of profit to the small shopkeeper would mean that he would cease to push the sale of cheese. The shopkeeper is a very important factor in controlling the consumption of any food product. It is natural that he urges the sale of the article on which he is making the biggest profit, and which he can handle with

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most satisfaction to himself. To give the shopkeeper a reasonable profit is one of the surest ways of increasing the consumption of any article. Customers are very much influenced by the suggestions and persuasions of the merchant from whom they purchase their supplies.

CHESHIRE CHEESE.

The Cheshire cheese was also somewhat of a disturbing factor in the market of 1907. The output was said to be a record one, although it seems to be impossible to secure an accurate estimate of the actual quantity manufactured. While the Cheshire cheese is not sold to any extent outside of Lancashire, that is to say, in Liverpool, Manchester and surrounding districts, comparatively small quantities were offered on the London market during the past season. There are two kinds of Cheshire cheese. The old Cheshire is a slow-ripening cheese which is allowed to develop considerable 'tastiness' before it is offered for sale. The new Cheshire is a very soft, loose-textured, acid sort of cheese, which is put on the market in a very green condition, but which owing to the excessive moisture, has a softness that seems to pass for maturity. Although the supply of this cheese has increased in recent years, it does not seem to be very popular except with certain classes and in a limited district. The increased supply has so reduced the price during the last year or two that it will probably cease to be as popular as it has been with farmers who produce it.

IMPROVED FACILITIES AT LIVERPOOL.

A very important improvement was completed at Liverpool in October last, when the Canadian Pacific Railway Company opened a cold storage warehouse in the shed at the Sandon dock, where the Montreal-Liverpool steamers of that line discharge. Butter, cheese, bacon and fruit can now go direct from ship to cold storage, and the exposure consequent on delay in removal from the quay is avoided. The equipment is first class, and there is ample room for extension as the needs of the traffic may warrant.

Judging by the expressions of appreciation from the importers of Liverpool, the facilities which this improvement provides will be fully utilized.

With the opening of the new King Edward Dock at Bristol, added to the splendid arrangements at London, Canadian produce should now be well cared for on being landed at these three important ports. Glasgow is still without these special dock facilities, but it must be admitted that owing to climatic conditions the need is not so great at that port as it was at the more southerly ports.

CHEESEMAKING IN SOMERSET COUNTY.

Most Canadian cheesemakers know that the type of cheese to which the Canadian variety belongs had its origin, many generations ago, in the picturesque county of Somerset, England, and that it derives its name from the old village of Cheddar, situated therein. The county still retains its supremacy and reputation for high-class Cheddar cheese, and an enormous quantity is produced within its borders every year. There are no factories such as we have in Canada, the cheese still being manufactured on the farms where the milk is produced. The art of cheesemaking has been reduced to a systematic basis of recent years, mainly through the efforts of the county council, which has established schools where the dairymaids are given courses of instruction in the theory and the art of cheesemaking. Having a day or two to spare, the writer concluded that the time would be well spent in acquiring some first hand knowledge of the conditions which enable the Somerset cheesemakers to win such a high place for their product in competition with the outside world.

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Through the kind offices of Mr. W. A. MacKinnon, Canadian Trade Commissioner at Bristol, a trip was planned in advance, so that no time was lost in unnecessary travelling.

A LEADING SOMERSET DAIRY.

Starting from historic old Bristol one beautiful August morning, accompanied by Mr. MacKinnon and Mr. E. G. Walker, a well known agricultural writer who is thoroughly familiar with the dairy industry of the district, the first stop was made at Taunton Drew Manor. At the Rectory Farm, Mr. Walter J. Keel runs a high-class cheese dairy, using the milk of 40 milking Shorthorns. Mr. Keel is one of the committee in control of the Somerset Cheese School, and a first-class dairyman, who understands every detail of the business from the management of the herd to the disposal of the product. As an evidence of the care which he bestows on his dairying, it may be mentioned that his cheese sell regularly for 84 shillings a cwt. (18 cents a pound). The methods which produce such a result should be interesting to Canadian dairymen. In the first place, the pasture lands are carefully cleared of all weeds and foreign growths, leaving nothing but the sweet flavoured grasses from which the cows obtain their sustenance. Mr. Keel will tell you that there are two reasons for this, namely, that he cannot afford to waste the fertility of the soil growing useless weeds, and that he dare not run the risk of having his milk tainted with weedy flavours. The cows are milked in the pasture field, in opposition to the practice which prevails in Scotland of milking in the stable, but there is no fixed or stationery milking yard where filth and dust accumulate, as they will in a place where cows are regularly milked. He lays much stress on this point, and we think very properly so, because there is serious contamination of the milk from the germs which are found in the dust arising from the dried droppings of animals. Although the nights are cooler in Somerset than they are in Canada, the milk is well cooled when carried to the dairy. The dairy adjoins the house, and needless to say, it is as clean and free from offensive odours as the best kept kitchen. The process of cheesemaking does not differ essentially from that which is practiced in Canada, but to that we shall refer again. The cheese are cured slowly at 60-65 degrees (cool cured) and are not moved from the curing room until they are two and a half months old.

SOMERSET CHEESE SCHOOL.

The next point of interest was the Somerset Cheese School, where we were most cordially received by the capable instructress, Miss M. J. Cannon, a daughter of another well known Somerset dairyman, Mr. Henry Cannon, of Milton Clevedon, Evercreech. The school is conducted at Dudwell Farm, Chewton Mendip, where there is a fine, large dairy. The courses given are thoroughly practical, the students taking part in the actual work of making cheese every day. The apparatus in use in these dairies naturally differs considerably from that which is employed in Canadian cheese factories. In the first place, the cheese vat is simply a round tin tank somewhat resembling a large weigh can. It has no steam jacket nor other provision for heating. The 'scald,' as it is called in England, is effected by dipping out a portion of the whey at a certain stage, heating it over a fire or with steam, then pouring it back into the vat, and thus raising the temperature of the whole contents. This operation is usually repeated a second time in order to complete the scald. Curd knives somewhat similar to Canadian knives are used. The peg curd mill is almost universally used in Somerset. The acidimeter is exclusively used to determine the various stages of the process. A sufficient quantity of rennet is added to the milk, at a temperature of 84 degrees, to effect complete curdling in 45 minutes. The milk is required to show an acid test of .21 when the rennet is added. The 'cooking' temperature, or highest 'scald,' is somewhat lower than in the average Canadian practice, but this is offset

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by breaking the curd very much finer in the whey, and by use of the peg mill, which grinds the curd into smaller particles. Miss Cannon likes to have it take three hours after the rennet is added until the curd is finally removed from the whey, with the acidity at .17. The curd is milled a short time before salting, when it has become leathery and flakey when torn asunder. It takes about three hours from the time the whey is removed until the curds are put to press. The curds are salted at the rate of $2\frac{1}{2}$ pounds of salt to 112 pounds of curd. (About $2\frac{1}{4}$ pounds per 1,000 pounds of milk.) The cheese remain in the press two or three days.

The cheese are cured at 60 to 65 degrees, and are kept in the curing room for two or three months. It may seem rather curious to Canadian cheesemakers to be told that these cheese are made on what is known as a 'quick ripening' system in England, which only goes to prove that such terms are merely relative. All the cheese examined at the school were of fancy quality, showing a fine, waxy texture, and a delicious 'cheesy' flavour.

These notes are written as a matter of interest to Canadian cheesemakers and not with a view of suggesting that the practice outlined should be adopted in any way.

I did not find that the Somerset makers had any greater technical skill than well trained Canadian makers have—they probably have less—but they have better material to work with, i.e., milk in better condition, and they are much more thorough and careful in their methods. The question of sanitation receives more attention than it does from Canadian makers.

The next point of interest was the old village of Cheddar, which is not now a cheesemaking centre, but is the resort of a large number of tourists who go there to see the extraordinary cliffs and the wonderful caves in the limestone rocks adjoining the village.

SHEPTON MALLET SHOW.

It was our good fortune to visit the district when the Mid Somerset Agricultural show was being held at Shepton Mallet. An introduction to the president and secretary secured for us every attention and courtesy at their hands, and the writer was enabled to inspect the large exhibit of cheese and butter with every facility. (Plate IX.)

There were over 1,000 full sized Cheddar cheese on exhibition, besides numerous half loaf cheese and also a large class of Cærphilly. There was one prize for the makers who had not taken a first prize in any class at the society's show during the past three years. This class showed the largest number of entries, although the prizes were not as large as they were in the open classes. The most striking characteristic of the cheese at this exhibition, as well as of those which were seen in the various dairies, was the remarkably fine flavour. The Somerset cheesemaker is not content with the mere absence of bad flavour, his cheese must have a positive quality as well as a negative quality and a decided 'cheesy' flavour is considered essential for a strictly fancy cheese. The cheese are not so uniform in size, appearance or quality as one would find in a large exhibition of Canadian cheese, and I think possibly some of the cheese were quite as inferior as anything which would be seen at a similar exhibition in Canada.

SOME IMPRESSIONS.

By way of summary the following impressions may be recorded as a result of this brief visit to the home of the Cheddar cheese, taking into account at the same time information gleaned from other sources.

The most striking characteristic of the finest cheese made in Somerset, or anywhere in Great Britain for that matter, is the typical cheese flavour, sometimes spoken of as a 'nutty' flavour, and the absence of objectionable taint of any kind. In

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trying to account for this superiority, one must take note of the alleged special fitness of the soil and herbage of England and Scotland, although it cannot be said that this point has been clearly established. It is claimed, however, that certain farms have been noted for producing a specially fine quality of cheese, while every effort has failed to produce similar results on certain other farms.

These finer distinctions are lost sight of in the factory system, where the milk from several farms of different character is mixed together, and while it tends to uniformity of product, it probably does not permit of the individual excellence which some of these farm dairies reach.

Mention has already been made of the exceptional prices obtained for the product of certain dairies. A point worth noting in this connection is the fact that articles of the highest excellence of quality always command a price out of proportion to the actual superiority which can be discerned. The demand of the connoisseur, who is determined to have the very best, gives the highest quality of cheese an adventitious value, which is sometimes not justified by intrinsic worth. Thus we find that there is a much wider range of prices for cheese all of which will pass as first grade, than there is between the average price at first grade and that which is inferior. This shows how foolish it is for a maker of the factory management to be satisfied with producing cheese which merely 'pass' as first grade.

It is true that the factory does not always receive the full advantage which should come from having turned out a superior article, but that is due to the fact that a reputation must be earned and established before the full benefit can be reaped.

While Canadian factories can never hope to secure the high prices that have been quoted herein, there is hardly a factory in the country the product of which could not be improved in value, if due attention were given to certain details in the production of the milk and in the manufacture of the cheese itself. Let us see, then, what are the means employed by these old country dairymen to secure these special results:

(1) They give careful attention to the pastures and keep them free from noxious herbage in the shape of weeds, &c.

(2) Milking is done under strictly sanitary conditions, avoiding contamination with germ laden dust, foulness of any kind in the surroundings, or the use of improperly cleansed utensils.

(3) The night's milk is cooled in warm weather.

(4) The dairy (cheese factory) is well constructed, perfectly drained, and is kept scrupulously clean.

(5) The cheesemaker is qualified and takes sufficient pride in his or her work to do his or her best every day.

(6) The cheese are cool cured and are not offered to consumers in an unripened condition, and before they have developed the typical cheese flavour.

It must be admitted that when there are 50 or 100 patrons to deal with, and the milk is exposed in so many different ways, the problem is a much more complex one, and therefore much more difficult of solution with us than it is with those dealing only with the milk of a single herd. But we must have some ideal if we are to make progress, and for those who do give attention to these details the reward is sure and substantial.

MEETINGS IN GREAT BRITAIN.

Invitations were received from the Manchester Produce Association, the Glasgow Provision and Fruit Trades Association and the Liverpool Produce Exchange, to give addresses before the members of these associations. Needless to say these invitations were gladly accepted. There was a good attendance of members, many of whom took part in the discussions, thus adding very much to the interest and usefulness of the meetings. These gatherings afford excellent opportunities for removing wrong impres-

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sions, and for getting new ones from the point of view of both the Canadian producer and the receivers in the old country. It was gratifying to observe the cordial feeling which exists towards Canada, and things Canadian, and while it was frequently asserted that sentiment did not count in matters of trade, one could not help feeling that the large place which Canada now occupies in the minds of the people in Great Britain is a strong, though possibly unconscious, influence towards increasing and strengthening our trade with the mother land.

In the discussions at these meetings the following points were emphasized: (1) that it will check consumption and injure the trade seriously to ship cheese in a green condition, (2) that during the last year or so there has been a heavy loss from short weights, and that importers will have to protect themselves against such loss by having a wider margin on their purchases, (3) that cool curing is a great benefit to Canadian cheese and (4) that the British market will take largely increased quantities of all Canadian produce, including bacon and eggs and fruit, if only the quality is of the best.

The more familiar one becomes with the whole question of supplying Great Britain with food stuffs, the stronger must become the conviction that the great desideratum is to have only goods of choicest quality to offer. If we make sure on that point, all other difficulties will very largely disappear.

FACTORY BRANDS ON CHEESE AND BUTTER PACKAGES.

The advisability of each factory placing its own brand on every box of cheese or butter was frequently discussed with importers. Opinion is somewhat divided on this point, but the majority evidently prefer to depend on the Montreal shippers' brand. While it would appear to be an advantage to a factory which produces a uniformly fine quality of cheese or butter to sail under its own colours, especially if the factory be a large one, as a general rule there is nothing gained in the use of a factory brand unless there is discrimination in its application to prevent it being put on anything but No. 1 quality. A brand which is found on cheese or butter of both good and bad quality cuts both ways and has no value. For the small and irregular lots of cheese, of which we have so many in Canada, the shippers' brands which are now pretty generally used, seem best adapted to meet the needs of the situation. The Canadian exporter establishes brands for cheese of certain characteristics as well as for particular grades of quality and then sorts his numerous lots accordingly. He is bound to keep up the standard for each brand if he wishes to retain the confidence of his correspondents, and the result is that business is facilitated and fewer misunderstandings occur than if the cheese were exported under factory brands only.

The attempts to establish district brands can never serve any good purpose unless great care is exercised in the use of the brand. The so-called 'impress' brands which are applied indiscriminately, have little or no value for the reasons already given. Take the 'Brockville' brand, for instance. While some dealers express satisfaction with the quality, others have told the writer that they would not buy any more of these cheese because 'the last lot was very inferior.' Curiously enough, the cheese bearing the 'Brockville' brand are more generally known as the 'stamped' cheese than as 'Brockvilles.' As a matter of fact, the words 'Brockville' and 'Ingersoll' and some others, have come to signify a certain grade of quality or character of cheese rather than locality of origin.

THE DATING OF CHEESE.

It was frequently represented to me that all Canadian cheese should bear an indelible mark showing month of manufacture. It was charged that orders for

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September cheese are sometimes filled with cheese manufactured in other months. My replies to these representations are summed up in a letter which I addressed to *The London Grocer* on the subject, as follows:—

‘First allow me to quote the Canadian law as it bears on this question:

“No person shall knowingly and with intent to misrepresent, sell, or offer, expose or have in his possession for sale, any cheese or butter represented in any manner as having been made in any month other than the month in which it was actually made.”

‘I believe this law was enacted for the purpose of preventing as far as possible any practice which might have a tendency to destroy confidence on the part of the old country merchant, and I am heartily in sympathy with any movement or action having that object in view.

‘I do not believe, however, that the month of manufacture is a proper basis for the determination of values, because it does not represent anything which has to do with the intrinsic quality of the cheese. September-made cheese have been appreciated in the past because on the average the climatic conditions during that month have been favourable for curing cheese in the ordinary curing room so as to give the cheese the character ‘most desired. It is a great mistake, however, to suppose that all September made cheese are better than those made in any other month. No greater fallacy could be entertained. It has often happened that the cheese made during the month of August, as a whole, were quite as good as those made in September of the same year. The same can be said for at least the first half of October.

‘New Zealand cheese are not classified, as far as I am aware, according to month of manufacture, for the very good reason that climatic conditions in that country do not vary sufficiently during the cheesemaking season to materially affect the curing. The cool curing movement in Canada is intended to overcome the defects in hot weather cheese, and when it becomes general, as it will, such variations of quality as are due to climatic conditions, and the defects caused by high temperatures, will very largely disappear.’

OTHER REASONS FOR DATING CHEESE.

If the practice of shipping green cheese is persisted in by the producers and exporters, it is possible that the compulsory marking of every cheese and every box containing cheese with the day and month of manufacture, may be found to be the most practicable and effective means of putting a stop to it. There is this also to be said, that if the cheese were marked with the date of manufacture, the prejudice against the cheese made in certain months of the year would very soon largely disappear.

CANADIAN FRUIT IN GREAT BRITAIN.

The close of the season of 1906 found the apple trade in fairly satisfactory condition and importers and receivers generally expressed themselves as pleased with the improvement which had been made in the packing and grading under the operation of ‘The Fruit Marks Act.’ There was a decided note of increased confidence in the expressions of those with whom the subject was discussed. That this confidence has been somewhat disturbed by the unsatisfactory experiences of some receivers of the crop of 1907 is evident from the reports which have come to hand and the communications which have been received on the subject. It is to be regretted if the progress which has been made toward putting the apple business on a more stable basis has received even a temporary setback. The situation affords a striking object lesson for Canadian orchardists of the necessity for better organization on their part, and points plainly to the advisability of the growers assuming a fuller control over the preparation of their product for the market.

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Interviews with the Fruit Brokers' Associations at Liverpool and Bristol and with other receivers at Glasgow and London brought out the opinion that the sale of Canadian apples could be largely increased if a good standard of quality and honesty of packing are maintained. It was continually asserted that there is no market for inferior fruit and the experiences of the past season certainly confirm this view. The demand for choice apples in boxes appears to be growing, although the auction rooms naturally discourage the use of this package. The London market, being more accustomed to variety of package, is probably more favourable to the box than any of the other centres.

AUSTRALIAN SHIPMENTS.

The Australian shipments are increasing and although they arrive during the 'off' season for the northern hemisphere, the competition is being felt to some extent. The state of Tasmania especially is giving considerable attention to apple growing. The largest shipment of apples ever landed in Great Britain from one steamship came from Tasmania during the past season. The quality of their apples does not come up to the Canadian standard, but like Australasians generally, the Tasmanians apparently recognize more fully than Canadians do that it is bad policy to export anything of an inferior character, and at the same time they give careful attention to packages and the packing. This is a hard kind of competition to meet, and the comparisons which are made, even though the apples are not on the market at the same time, are detrimental to the Canadian trade. Northern Italy is now sending some apples to the London market. These are not shown in the table of imports, probably because they arrive from some port in France and are thus credited to that country.

Table I. shows the importation of apples into the United Kingdom by countries for the years ending December 31, from 1903 to 1907.

TABLE I.—IMPORTS OF APPLES INTO GREAT BRITAIN FOR THE YEARS 1903-7 (ANNUAL STATEMENT OF THE TRADE OF THE UNITED KINGDOM.

	1903.	1904.	1905.	1906.	1907.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
From Germany.....	20,738	5,264	5,198	19,545	5,152
" Netherlands.....	49,086	20,541	49,317	23,645	34,009
" Belgium.....	112,688	171,407	46,775	46,967	66,259
" France.....	48,976	45,151	107,745	21,250	21,630
" Portugal.....	203,400	126,566	100,708	103,302	68,657
" Spain.....	10,110	1,267	63,614	11,060	40,266
" United States of America.....	2,381,619	1,850,037	1,631,819	1,407,645	1,413,231
" Other foreign countries.....	1,711	701	252	231	429
Total from foreign countries....	2,828,328	2,220,934	2,005,428	1,638,645	1,649,633
From Channel Islands.....	9,861	8,438	20,713	13,548	7,582
" Australia—					
Western Australia.....				62	491
South Australia (including					
Northern Territory.....	11,842	31,664	24,228	18,841	9,079
Victoria.....	29,373	22,650	23,018	20,783	40,523
New South Wales.....		2,278	176	270	709
Tasmania.....	144,678	277,367	173,284	117,577	229,331
" Canada.....	1,545,455	1,208,409	1,247,766	998,937	1,588,603
" Other British possessions.....	9	41	47	69	281
Total from British possessio	1,741,218	1,550,847	1,489,232	1,170,087	1,876,599
Total.....	4,569,546	3,771,781	3,494,660	2,808,732	3,526,232

FRUIT PULP AND CANNED APPLES.

My attention was drawn to the large demand for fruit pulps of various kinds, and especially for raspberry pulp. A Glasgow firm imported last year some 250 tons of this

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pulp from Tasmania. Some criticism was heard of Canadian canned apples, the complaint being that different varieties were often found in the same can, with the result that owing to different cooking qualities, one kind is reduced to pulp, while others are underdone.

PEARS.

There is undoubtedly a good market for pears in Great Britain. Several shipments of Bartletts were made last year to Glasgow, Liverpool and Manchester, and turned out very well. The greatest difficulty in the way of successful pear shipments at present is in securing cold storage for comparatively small lots. If the quantity is large enough to fill or nearly fill a chamber, it is very easily arranged, but as the smallest chambers hold about 2,000 pear cases it will easily be understood that with shipments of a few hundred cases the difficulty is a serious one. It would seem to be a case where combination among shippers would work to advantage.

THE CIDER INDUSTRY.

There is a large quantity of inferior apples produced in Canada every year which might well be utilized in the manufacture of cider. If these inferior grades of apples were utilized in this way the export stock would be correspondingly improved, very much to the advantage of the trade. There is not, at present, a large demand in Canada for fermented cider as a beverage, but undoubtedly the demand would increase if a good article were more generally available, because it is a pleasant, wholesome beverage.

Cider is the fermented juice of the apple. Unfermented or sterilized apple juice is not cider in the strict sense of the term. A considerable quantity of apple juice is made in Canada, some of which is consumed while fresh, a portion is made into cider vinegar and a comparatively small quantity is fermented, more or less perfectly, and converted into cider. The methods which are employed by cidermakers in Canada, are for the most part crude and unsanitary to a degree which makes successful cider-making an impossibility. The process is one of fermentation, due largely to the yeasts which have their natural habitat on the skin of the apples. Foreign fermentations arising from moulds or other germs which have been encouraged by lack of cleanliness in the handling of the apples, or in the care of apparatus and premises, make it impossible to produce a good article.

Cider has been made for centuries on farms in the western and southwestern counties of England, and it was with a view of learning something of the conditions under which cidermaking is carried on there that the writer made some inquiries on the subject.

English cider is made very largely from apples which are grown specially for that purpose. The fruit is very small and is known as 'bitter' or 'bitter sweet,' according to the amount of tannin and malic acid which it contains. These so-called 'vintage' apples are grown extensively in Hereford, Gloucester, Somerset and Devon, and these are the principal cider making districts. In Norfolk and other eastern counties, the culinary or edible varieties of apples are used to some extent. There is a difference of opinion among cider authorities as to whether as good cider can be made from the ordinary apples as from the vintage varieties, but it must be admitted that the advocates of the vintage fruit seem to have the best of the argument. In France, where cider has probably been brought to the highest degree of perfection, the seedling or vintage apple is the favourite. One authority took this view of the matter, namely, that the connoisseur prefers the fuller and more pronounced qualities of the vintage cider, while a person not accustomed to drinking it would prefer the cider made from culinary or eating apples. The cider is practically all made on farms

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in England. In many cases it is intended only for home use, and is a very common drink for farm labourers in the summer months. It is frequently specified in the terms of engagement that the labourer is to have free cider. They want something that 'scratches' as it goes down. It is quite possible that those who provide this cider have their own reasons for preferring the coarser quality, because it no doubt goes much further than a sweeter or milder quality would.

The question for Canadian apple growers is not, however, whether vintage fruit is better than the ordinary varieties, but whether the inferior grades of the culinary or eating apples can be turned into a marketable cider at a profit.

A considerable quantity of Canadian cider has been imported into England and used for blending with the stronger vintage cider of Hereford and Gloucester. It is reported to have given good satisfaction for that purpose. A Norfolk county firm made cider from Canadian apples a few years ago and they claim that the quality was excellent, judged according to English standards.

There is a market for a large quantity of good cider at 16 or 17 cents a gallon, and probably more, delivered on the quays at English ports. The through freight rates from Western Ontario points to Liverpool range from 33 to 37 cents per 100 pounds, or including the weight of the barrel, about 4 cents per gallon.

The yield of cider should be from 8 to 10 gallons per barrel of apples, according to the composition of the apples and the efficiency of the methods employed for extracting the juice.

Suitability of apples for cidermaking depends on the proportion of at least three constituents, namely, sugar, acids and tannin. The French include mucilaginous substances in their estimate. During the process of fermentation, the sugar is converted into alcohol and thus gives strength and stability to the beverage. The tannin is the substance which imparts a bitter taste to apples and tends to pucker the mucous membrane of the mouth. Its action in cidermaking is to coagulate the albuminous constituents of the apple and thus it helps to clarify the juice. It also has some effect in preventing too rapid fermentation and adds to the soundness and keeping quality of the cider. The acids, chiefly malic, give a refreshing quality to the cider which is important, especially in warm weather.

It is not at all likely that cidermaking will be developed to any extent on farms in Canada as it is in England and France. Labour and other conditions favour the factory plan in the same way as the cheese factory and the creamery have taken the place of the private dairy.

THE NATIONAL FRUIT AND CIDER INSTITUTE.

The National Fruit and Cider Institute at Long Ashton, near Bristol, was established about six years ago for the purpose of carrying on investigations with the object of 'reducing the manufacture of cider to a definite method and system.' The institute receives financial support from the Board of Agriculture and the Bath and West Society. The director, Mr. B. P. T. Barker, M.A., was absent on sick leave when the writer called, but the man in charge did everything possible to make the visit interesting and instructive. The science and art of cidermaking are here receiving careful study and investigation. The influence of the composition of the apple and the apple juice on the quality of the cider is studied by making cider from single varieties of apples in conjunction with full analyses at the different stages. The writer had an opportunity of sampling some twenty-five or thirty ciders from as many different varieties of apples, in which there was found a wide difference in quality, but very few, if any, were as good as those ciders which were the result of blending two or more varieties. It is recommended that each variety of apples should be worked up separately, so that the composition of the juice and cider may be determined and thus permit of scientific and accurate blending after fermentation.

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The manufacture of perry (from pears) which is quite an extensive business in the southwestern counties, is also studied at Long Ashton.

THE INTERNATIONAL DAIRY CONGRESS AT THE HAGUE.

The writer had the honour of representing Canada at the great International Dairy Congress at The Hague, September 15 to 20.

THE ORGANIZATION AND ORIGIN OF THE INTERNATIONAL DAIRY CONGRESS.

As this was the first congress at which Canada has been represented, it may be interesting to give a short account of the origin of these international dairy congresses and of the International Dairy Federation, which undertakes their organization. The first congress was held in Brussels in 1902, through the initiative of the National Dairy Society of Belgium. This conference was semi-official, the Belgian government having been requested to invite foreign countries to send representatives. The outcome of the meeting was the organization of the International Dairy Federation with the following constitution:—

STATUTES OF THE INTERNATIONAL DAIRY FEDERATION.

Establishment.

Art. 1. On the initiative of the First International Dairy Congress an International Dairy Federation was established.

Object.

Art. 2. The object of the International Dairy Federation is:

The promotion of scientific and technical interests of dairy work, by:

1. Continuing in the scientific advance in dairy work, to undertake the study of various matters relating to technical dairy work regarded from different points of view.

2. By taking the initiative in advancing scientific measures and thus ensure regular advancement of the trade in dairy produce.

The International Dairy Federation does not interfere in the different countries in circumstances of an internal nature.

Means.

Art. 3. To attain its object the International Dairy Federation will adopt the following measures:

1. The International Dairy Federation shall organize international dairy congresses. These congresses shall successively be held in various countries. At the congress problems of actual interest in regard to dairy work shall be discussed.

2. The International Dairy Federation shall use its influence with the government towards the conclusion of international conventions; in these international conventions regulations shall be laid down by the different countries for the purpose of checking fraud and ensuring the purity of the product from a hygienic point of view.

3. The International Dairy Federation shall organize international exhibitions (in connection with the congresses).

4. The International Dairy Federation shall issue rewards for such works as are highly meritorious from their importance in the advancement of dairy work.

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5. The International Dairy Federation shall in the chief markets establish special committees under its own control, whose duty it shall be to enlighten the international market on the selling conditions in that centre.

6. The International Dairy Federation shall issue a bulletin keeping the members acquainted with the doings of the Federation. If possible also a report shall be issued containing a notice of discoveries and applied inventions, the course of the international butter market and information relating to the condition of the market.

Members.

Art. 4. The Federation consists of:

1. Dairy associations.
2. Ordinary members.
3. Honorary members.

Art. 5. The dairy associations may be represented in the Federation by one or more delegates; the contribution is 10 guilders (16s. 8d.) for which they have the right to send one delegate. For every additional delegate an extra annual contribution of f. 2.50 (4s. 2d.) shall be paid.

The working members pay an annual contribution of f. 2.50 (4s. 2d.) towards the general expenses besides the costs of printing and circulation of the reports issued by the Federation.

The contributions shall be sent directly or through the national committees to the central treasury.

Resources.

Art. 6. The resources of the Federation consist of:

1. Members' contributions;
2. Donations;
3. Subsidies from the governments.

Committee.

Art. 7. The International Dairy Federation shall be represented by a permanent international committee and by the national committees which have been constituted in the different countries and have joined the Federation.

Art. 8. The permanent international committee is established at Brussels; it consists of ordinary members, honorary members and five secretaries.

The ordinary members are chosen by the national committees; each committee appoints a representative, who represents his country.

The president is chosen by the ordinary members of the committee.

The honorary members, to an unlimited number, are chosen from persons of various countries, who have done service in matters relating to dairy work.

The secretaries shall be appointed by the international committee, one of them acting as secretary-general.

The ordinary members and the secretaries only have a vote.

The international committee provides for the good management of matters relating to the Federation.

From the international committee an executive committee is chosen, consisting of the president, the secretary-general and the Belgian member.

The executive committee manages all matters arising between two successive meetings of the international committee.

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It is authorized to act quite independently, provided its decisions be approved at the first subsequent meeting of the international committee.

Resolutions, however, only become definitively effective after approval at the first subsequent international dairy congress.

Art. 9. The national committees are constituted in every country in accordance with special local regulations.

Where there is no national committee in any country, the committee of the International Dairy Federation shall assume the initiative in establishing such a committee and towards the temporary indication of a representative who shall represent that country on the committee.

Art. 10. The committee shall meet at least once a year, upon the summons thereto from the president, to decide upon all measures that may be adopted in the interest of the Federation.

All correspondence should be addressed to the secretary-general.

Art. 11. The authority of the permanent committee lasts throughout the period-falling between two successive international congresses.

The members are eligible for re-election.

The permanent committee of the International Dairy Federation has its headquarters in Belgium, under the presidency of Baron Peers Van Neiuwburg. National committees have been appointed in all the principal dairying countries of the world. The writer has been named as the Canadian representative on the British committee.

The Second International Dairy Congress was held at Paris in October, 1905. It was organized by the French committee of the International Dairy Federation and was held under the auspices of the French government, which gave a special grant towards the expense, and invited foreign countries to send official delegates.

The third and last congress held at The Hague, September 15 to 20 last, under the auspices of the Dutch government, was organized by the Dutch committee of the International Dairy Federation.

The programme of the congress, which follows, will indicate the scope of the papers and discussions.

PROGRAMME.

1st Section—Legislation and Regulations.

1. Uniformity of chemical methods for the examination of milk, butter and cheese.
2. Uniformity of methods of control of milk and milk products (other than butter and cheese) in the places where they are produced and in the market.
3. Butter control.
4. Cheese control.
5. Dairy control: by whom should it be exercised and to what shall it relate?

2nd Section—Hygiene.

With subdivision 'Veterinary Problems.'

1. Conditions to be imposed on the sale of milk wholesale and retail.
2. Conditions to which milk must conform if intended for use as such, and especially as food for children.
3. 'Pasteurization' of milk in the creameries and the conditions under which pasteurized buttermilk is to be returned to the producers.
4. Sterilization of milk for preserving purposes.
5. 'Gouttes de lait.'
6. Sanitation of cowhouses in connection with the production of milk.
7. Danger of milk from cows submitted to the tuberculine test and which were thus found tuberculous.



Combined cheese factories and creameries in Friesland, Holland (co-operative).



Combined cheese factories and creameries in Friesland, Holland (co-operative)

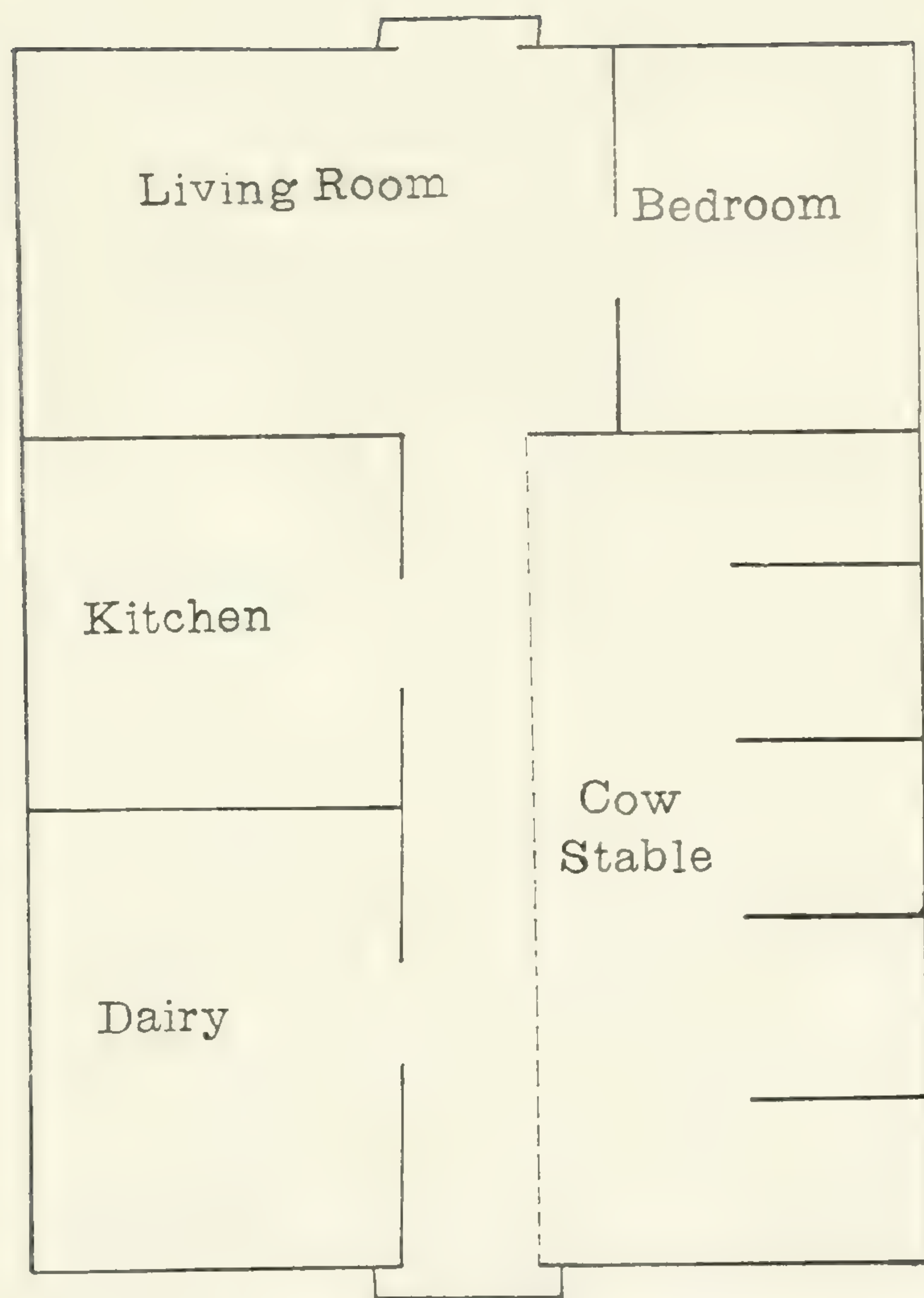


FIG. I.—Arrangement of an old Dutch Farm House.

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3rd Section—Industry.

1. Pure ferment 'cultures' for the manufacture of butter and cheese.
2. Causes which influence the proportion of water in butter.
3. Preservation of butter.
4. Results obtained by application of improvements on the quality of butter.

The following countries were represented officially at the congress:—

Argentina, Sweden, Denmark, Norway, Hungary, Italy, the Netherlands, Belgium, Roumania, France, Austria, Great Britain, Canada, New Zealand, Spain, South Australia, Russia, Switzerland, Germany, Victoria, New South Wales.

In addition to these official delegates a large number of voluntary delegates representing dairy schools and dairy societies of one kind or another were in attendance, making a total of about 600 delegates.

The official language of the congress was French, but discussions were carried on in German, Dutch, English and French, and a summary of each day's proceedings with the full text of all resolutions was printed in both French and English and distributed the following morning.

The sessions of the congress were held in the various halls of the Kursall at Scheveningen, a suburb of The Hague, and a famous watering place. The opening ceremonies were attended by the Prince Consort, several diplomats, and members of the Dutch government and many other notable people.

The British delegates held a meeting before the congress opened and appointed a special committee to follow the proceedings of the congress, in its different sections, and to report from time to time to the whole body of delegates on anything which came up of special interest to the British delegation. The following gentlemen comprised this committee: J. Lloyd-Baker (chairman); Hon. T. W. Tavener, Victoria; Hon. W. P. Reeves, New Zealand; J. A. Ruddick, Canada; A. E. Balleine, Board of Agriculture, London; E. C. Treppin, secretary.

The chief interest in the discussions centred around two points, namely, the control of the manufacture and sale of butter in countries where the manufacture and sale of margarine are permitted and where there is some difficulty in preventing adulteration of butter; and the question of regulations dealing with tuberculosis. As Canadian delegate, the first question was not of very much interest to me, as we have settled all such matters of control in this country by prohibitory legislation. The papers were all printed in French and English before the congress opened, so that delegates had an opportunity of studying them with a view of taking part in the discussions.

The findings of the congress were embodied in resolutions which were proposed by the various sections, and finally passed at the last general session of the congress. It will be seen that the resolutions are not very decided on any of the points raised. There seemed to be a tendency to amend and modify so as to satisfy all parties until in the end most of the resolutions were pretty much neutralized.

RESOLUTIONS ADOPTED BY THE THIRD INTERNATIONAL DAIRY CONGRESS.

1st Section—Legislation and Regulations.

The Congress adopts the principle of unification of the methods for analyzing milk and its sub-products and recommends all countries to adopt the method employed by Leffman-Beam for the determination of the Reichert-Meissl figure in butter fat.

The Congress is of opinion that it is necessary to make the control of milk efficient during all its processes from the milking until it is sold and

consumed, and expresses the opinion that a control should be established based on principles which, although general, may be differentiated according to the local customs in different countries and according to the different qualities for pure milk, at the same time not prohibiting the consumption of any milk.

The Congress, considering the importance of public hygiene and the principles involved, is of opinion that supervision in the dairy should be generally adopted; that, however, the interested parties should previously or simultaneously be convinced of the necessity of such supervision, and that they should be encouraged to adopt all necessary measures, but that the provisions should be made compulsory, and that the provisions should involve severe penalties in case of serious negligence.

The Congress, considering the great importance of the dairy industry from an economical point of view, is of opinion that in those countries where it would be in accordance with the customs and habits of the country, the government should from an economical point of view establish a compulsory supervision, but on the contrary, in countries in which such intervention would be impossible or unpopular, the creameries themselves should organize an economical control service as general and complete as possible; that the public authorities should encourage by subsidies the organization of independent control, and if necessary promote the observance of its provisions; that it is necessary to call frequently together the persons charged with this control, more especially with a view to establish general principles and as far as possible to maintain a certain unity of action and of technical as well as of economical organization.

The Congress is of opinion that the countries represented at the congress must prohibit the importation:

1. of all butter coming from such countries, which have not rendered it obligatory to add latent colouring material to all fats that could be mixed with butter, or which have not adopted an efficient system of control in order to guarantee the purity of butter;

2. of all butter, not bearing a guarantee mark, and coming from countries which have an efficient system of control to guarantee the purity of butter.

The Congress takes note of the following written statement of the English members:—

‘There is no guarantee against the importation of adulterated butter, except by prohibiting the importation of all butter which is not made under the supervision or inspection of the government of the country of origin.’

Further note is taken of Mr. Harald Faber’s amendment to the above written statement, reading as follows:—

‘And which does not bear any mark showing that the butter has been subjected to such control.’

The Congress takes for notification the following statement of Mr. Hoffer:—

‘In making legal measures to regulate the butter trade—which is a matter of international character—the idea and the meaning “butter” must be exactly defined and legally be determined as a definition of origin.

‘Butter is the nourishing fat of exclusively animal origin, which is obtained by churning cow’s milk.

‘The use of the term butter for eatable fats of other origin is to be prohibited by legal measures.’

The Congress expresses the desire that in view of the importance of cheese making and the promotion of honest trade in those countries where cheese is made, measures should be adopted to guarantee the purity and the quality of the product.

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The Congress expresses the desirability that the president of the permanent bureau of the International Dairy Federation shall take the necessary steps to have a special section added to the programme of the Fourth Dairy Congress at Budapest, relating to political economy, namely, with regard to the international trade in pure milk—either sterilized or pasteurized—in butter and in cheese and with regard to the advocacy of such trade.

2nd Section—Hygiene.

The Congress is of opinion that the veterinary, the chemical and the bacteriological control must be generalized as much as possible.

The Congress is of opinion that the retail trade in milk must be confined to specially licensed localities, in which no other articles are sold than milk or food products which are not detrimental for the milk.

The Congress is of opinion that producers and consumers in all countries should be convinced of the necessity to avoid all sources of infection of the milk.

The Congress is of opinion that the milk destined for consumption in its raw state, and especially that for infants' food, must be supplied from healthy and well fed cows which have been milked dry; further, that it should be well cooled after milking and be of a normal composition.

The Congress is of opinion that public authorities should endeavour to eradicate tuberculosis, and for this purpose to institute veterinary supervision of cattle as well as hygienic supervision of the cowhouses and medical supervision of the persons charged with the milking and with the treatment of the milk at the farms.

The Congress is of opinion that the dairy industry should endeavour as far as possible to avoid middlemen between the producer of milk and the consumer.

The Congress resolves that the following proposition proposed by Prof. Porcher be referred to the next Congress: 'Under the present condition of science it may be difficult to solve the problem as to the relative value of sterilized, pasteurized and raw milk. It seems possible, however, to admit that when one has good raw milk, of which the origin is known, it is not necessary to submit it to either of such treatments. On the contrary, it becomes imperative that such treatment be adopted, when the origin of the milk destined for infant food is not known.'

The Congress being of opinion that milk coming from dairies which have at their command healthy animals and in which all the necessary hygienic precautions have been adopted, may be supplied raw, but deems it necessary from a general sanitary point of view as well as with regard to tuberculous infection by means of milk, to recommend the use of milk which has been sterilized or sufficiently boiled or pasteurized, but by methods the efficiency of which with regard to the tubercle bacillus has been scientifically proved, with due observance of the varying power of resistance observable with this micro-organism.

The Congress recommends the method of Dr. Bang for combatting tuberculosis in cattle where this is applicable; moreover Dr. Ostertag's method of combatting tuberculosis in cattle by removing such animals as are clinically affected and by breeding calves free from tuberculosis, is practicable in all countries, and it is imperative that the public authorities without delay take effective steps towards this end.

The Congress is of opinion that the elimination of animals which are acknowledged to be clinically affected with tuberculosis and the breeding of

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calves free from tuberculosis, retain their importance, even when expectations, based on preventive inoculation against tuberculosis, might have been realised.

The Congress deems it desirable that the bureau of the next International Dairy Congress shall enter into correspondence with the bureau of the International Congress of the 'Gouttes de Lait,' in order to effect a closer relationship than exists at present.

The Congress requests the International Dairy Federation to institute a permanent and independent committee, based upon the legal security in the several countries; this committee to be formed from the delegates of the various countries and shall be charged with the preliminary operations for the solution and practical adoption of great dairy problems of international importance. This committee shall report to the International Dairy Congresses.

The Congress deems it desirable that the question relating to the use of the refuse products of the dairy industry as fodder for milch cows, providing milk for infants, shall be referred to the programme of the next International Dairy Congress.

2nd Section—Hygiene.

Sub-section: Veterinary Questions.

The Congress is of opinion with regard to milk production, that cow-houses should be constructed according to hygienic requirements.

The Congress is of opinion that to encourage the improvement of cow-houses it is highly desirable that cowhouse competitions should be established.

The Congress is of opinion that besides having hygienic cowhouses it is desirable that the milk producing animals be afforded ample opportunity for open air exercise.

The Congress deems it desirable that except where particular circumstances make it impossible, legal prescriptions should be made for the construction of cowhouses and to safeguard the hygienic side of the production of milk in general. The object in view must be that in all countries the building of new cowhouses be only allowed on condition that they answer reasonable hygienic requirements.

The Congress is of opinion that cowhouses should be constructed in such a way that prophylaxis of diseases in general be possible and more particularly to guard against diseases of the udder and to prevent their development. The best method of housing cattle is that adopted in Holland, namely that of a raised flooring. It is recommended that the cowhouses be subjected to disinfection with lime water.

The Congress is of opinion that the veterinary control of cowhouses and milk producing animals must be considered as of great value from a hygienic point of view. It ought to be compulsory in those countries where legal regulations do already exist. This control must be exercised as frequently as possible, but not less than every three months.

The Congress considers the removal of animals with udder tuberculosis and with other clinical forms of tuberculosis as the most important measure to prevent the infection of milk.

The Congress deems it advisable, when milk is wanted entirely harmless in respect of tuberculosis, that such milk be taken from animals:

- (a) which are free from tuberculosis:
 - 1. which do not show any symptom of this disease;
 - 2. which do not react on tuberculine;
- (b) which are not kept in an infected cowhouse.

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The Congress is of opinion that, when milk coming from such animals, which react on tuberculine, is supplied to the public, and still altogether harmless milk is wanted, it is desirable that this should be sufficiently heated before it is used.

3rd Section—Industry.

The Congress is of opinion that the use of pure ferment 'cultures' for buttermaking is essential for rational processes of manufacture, because it permits the conduct of the fermentation of the cream with certainty and method.

The Congress is of opinion that it generally is absolutely necessary to use for the culture of ferments only such seeds as have been prepared in the laboratory under the stringent rules provided by the bacteriological expert.

The Congress is of opinion that it is also necessary to mention the age of the cultures, because of the rapid attenuation to which the milk ferments are submitted under influence of different physical and chemical conditions.

The Congress is of opinion that in order to make experiments in cheese factories, it is necessary to use pure cultures and to eliminate beforehand all the detrimental ferments present in milk. It is desirable to carefully determine the nature of the ferments to be used and the quantity to be added.

The Congress is of opinion that the pasteurization of the milk for cheesemaking must be carried out under special precautions as regards the method employed for heating.

The Congress is of opinion that it is absolutely necessary that laboratories give every assistance to the cheese factories and that they on the other part can be assured of finding collaboration and the support which has hitherto never been withheld.

The Congress is of opinion that the factors influencing the quantity of water in the butter are chiefly:

- (a) the temperature when churning;
- (b) the degree of density of the particles of butter prior to the removal of the buttermilk; and further;
- (c) the condition and treatment of the cream (pasteurization, fermentation, acidity, concentration);
- (d) the method of working the butter (kneading and salting).

The Congress agrees with the wishes embraced in the conclusions of M. Maze. Hence it urges that the dairy instructors and the interested industrial men must keep them well in mind and consider them carefully in order to thoroughly grasp the principles upon which those claims are based, which the butter industry has still to effect.

These conclusions are as follows:

1. The butter industry in connection with its perfect working arrangement is capable of regularly producing a good product;
2. Its cream separators guarantee a proper output; its refrigerating machines permit the exact application of the prescriptions in regard to the temperature which suit best for the method of working followed;
3. Its steam generators facilitate the cleaning and sterilization of the apparatus and implements.

But it is not perfectly familiar with the exact method of securing the good process of fermentation.

As unfavourable factors may be mentioned:

- (a) insufficient pasteurization, which is often done in a manner contrary to the principles of bacteriology;
- (b) bad quality (chiefly lack of energy) of the starters supplied by the trade;

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- (c) bad quality of the rinsing water, which frequently causes the butter to become rancid;
- (d) lack of every supervision in regard to the efficiency of the pasteurization, the purity of the fermentation process and the sterilization of the appliances used for buttermaking;
- (e) ignorance of the operators, who are unacquainted with the signification of infection.
- (f) carelessness on the part of the farmers, who do not seriously enough follow the advice given when the advantages of cooling the milk immediately after milking are pointed out to them.

For the executive committee of the Third International Dairy Congress,

DR. A. J. SWAVING,

The Secretary-General.

DR. H. P. WIJSMAN,

The Chairman.

For the permanent committee of the International Dairy Federation,

L. GEDOELST,

The Secretary-General.

BARON PEERS,

The Chairman.

The Dutch government apparently spared no effort to make the Congress a success, and they contributed in many ways to the enjoyment and comfort of the *Congressistes*. The writer is personally indebted to the Hon. J. D. Veegens, Minister of Agriculture, Industry and Commerce; H. S. J. Maas, Esq., Consul General for the Netherlands in London, and Dr. J. J. L. Van Ryn, Friesland Commissioner in Great Britain, for many courtesies and much assistance in the way of getting information.

It was the general opinion of the delegates that the chief value of the Congress was to be found in the intercourse which it permitted between persons engaged in dairy work from all over the world, and in the excursions which enabled the delegates to visit the farms and dairies in different parts of Holland, in which there was much to be seen that was both interesting and instructive.

A DUTCH AGRICULTURAL EXHIBITION.

A large agricultural exhibition was held at The Hague concurrently with the Dairy Congress. Unfortunately, owing to the outbreak of the foot-and-mouth disease, the government would not allow exhibits of dairy cattle, which was a matter of considerable disappointment to the delegates. As dairying is the national industry of Holland, the exhibition was particularly strong in exhibits of butter, cheese and dairy machinery. In the class for foreign cheese, Canada competed with England, New South Wales, New Zealand and Italy, and carried off the first prize. These exhibits were sent by a merchant in London. There was a very large entry of Dutch cheese, principally of the Gouda and Edam varieties. There was also a large exhibit of butter, which was shown in such a way that only the surface of the butter in the package could be seen by the judge or other person examining it. The packages were placed under a sort of closed counter with openings over each package about eight inches in diameter which were kept covered with a piece of glass. The dairy machinery on exhibition was of a very superior character in point of durability, finish and suitability. No question of expense seems to be permitted to interfere with having all dairy apparatus made in the best possible manner.

The agricultural educational exhibits from the various institutions in Holland were the subject of very favourable comment and attracted considerable attention. The thoroughness with which experiments appear to be conducted and the practical way in which the results were shown, called for considerable comment.

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NOTES ON DAIRYING IN HOLLAND.

A DUTCH CHEESE MARKET.

An interesting excursion took a number of the delegates to the province of North Holland, by which name the peninsula lying between the North Sea and the Zuider Zee is known. This district is famous for its large output of Edam cheese. Alkmaar is the principal market, but there are also markets at Hoorn and Edam. The quantity of cheese which is annually sold at Alkmaar equals about 200,000 boxes of Canadian cheese, and yet the whole district in which these three markets are located is not much larger than a good sized Canadian county. The cheese are all brought in by barge or wagon from the surrounding country and piled in separate heaps on the square in the market place. If the weather is showery, a tarpaulin is used to cover the cheese. The market officials have the cheese all weighed before the sale takes place. The individual cheese weigh about 4 pounds each, and they are weighed in drafts of about 100 cheese. The weigh house is a very ancient institution in all market towns in Holland, and usually has some very interesting features. (Plate XI.)

AN EDAM CHEESE FACTORY.

A drive through the district brought us to one of the co-operative Edam cheese factories (plate XI.), which are organized on lines very similar to those on which co-operative factories are run in this country, except that the true spirit of co-operation seems to have more place in their management than it does with us. An association is formed to build and operate a cheese factory or a creamery, the members of which give their joint and several note to some bank which furnishes all the money required. There is no share capital, but a certain amount of revenue is set aside each year to pay off the indebtedness.

A DUTCH FARM HOUSE.

During the same drive a visit was made to one of the old farms where the cows are kept during the winter months under the same roof as the family. The accompanying diagram will give an idea of the arrangement of the building. (Fig. 1.) While the cows are on pasture during the summer months, the stable is used as a cheese curing room. The winter's fodder is stored in the loft. The floors of the stable are of tile, the mangers and stalls of glazed earthenware, and everything is kept scrupulously clean. The Dutch passion for cleanliness makes this sort of thing possible.

A MODEL STABLE.

The most interesting and instructive feature of this trip was a visit to the farm 'Oud-Bussem.' (Plate XII.) Here we found 200 cows, kept under the most sanitary and hygienic conditions for the production of market milk. The stable floors are laid with tile, and the walls and ceilings finished smoothly with some kind of white enamel. The drainage and facilities for cleaning are perfect. A tunnel passes under the stable, and through this outlet all droppings are removed by means of a car running on light iron rails. The accommodations for the milkers and the conveniences for securing the utmost cleanliness leave nothing to be desired. A heavy thatched roof makes the building warm in winter and cool in summer. Ample light and ventilation complete one of the finest stables that the writer has ever seen. The surroundings of the stable are laid out in lawns, with flower beds and shrubbery, and the whole place is attractive in the highest degree. The milk of the herd is bottled and shipped to Amsterdam in

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very much the same manner as is now followed by the best dairies in this country. We were not allowed to enter the stables where the cows were, for fear of carrying the infection of the foot-and-mouth disease, but there was plenty of opportunity to view the interior through the open doors and windows.

AN ANCIENT DWELLING.

During a trip through the province of Gelderland, the excursionists visited a 'loshuis' or ancient farm dwelling. The 'loshuis' are said to have been built originally by the Anglo-Saxons, the primitive inhabitants of Holland. Like the other Dutch farm houses, they consist of one square building, covered with a high-pointed roof, but they differ to the extent that the various parts of the house are not separated, being, strictly speaking, all in one room. In one side of the building there is a door which gives access to the space in the centre. Around this space, which has no floor, are arranged on one side the cows; on the other side a piggery and horse stable; at the back the space for the family, on either side of which the beds are placed, each in a sort of narrow cabinet. In the centre of the family space there is a fireplace provided with the usual hangers for pots and kettles. Animals and people live there in common. It would be easy to place partitions in these farmhouses to make them similar to the Frisian or other Dutch farmhouses. This building, although kept in a clean condition, presented a great contrast to the elegant Weldan manor house and its beautiful park in the immediate vicinity.

LARGE PRODUCTION PER ACRE.

The total area of Holland is 12,648 square miles, a little over half the size of Nova Scotia, or equal to that part of Ontario lying southwest of a line drawn from the city of Hamilton to Southampton on Lake Huron. The population according to the latest returns is 5,104,137. The total exports of dairy produce for the year 1906 were 66,000,000 pounds of butter and 104,355,600 pounds of cheese. With butter at 22 cents per pound and cheese at 12 cents, the total value of the exports would amount to \$27,042,432, or very nearly as much as the value of the butter and cheese exported from Canada during the same period. These figures convey some idea of the enormous production per acre compared with Canada.

On a farm of 105 acres there were found 35 cows, 8 heifers, 25 calves, 2 horses and 25 milk ewes. These animals were fed entirely from the produce of the farm, with the exception of some linseed meal which is bought for winter use. In some of the best pasture districts it is quite common to keep two cows to three acres the year round.

The cow 'Alida' gave in a milking period of 365 days, 21,529 pounds of milk testing 3.09 per cent of fat.

Of course, the pasturage is most luxuriant and abundant and does not suffer from drought, because the water level in the ditches is not, as a rule, more than two feet below the surface of the fields.

The total number of cows in Holland in 1906 was 973,098, a few thousand less than the total number in the province of Ontario.

The average percentage of fat in the milk of the Dutch cows is a fraction over 3 per cent, but the yield of milk is very large.

CHEESE FACTORIES AND CREAMERIES IN FRIESLAND.

The province of Friesland is one of the most important dairying districts in Holland. There are 130 co-operative or semi-co-operative cheese factories and creameries in this small province consisting of 1,282 square miles. (Plates XIII and XIV.) The following description of the co-operative creamery at Uitwellingerga will

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indicate the character of these establishments. The building and equipment cost \$54,000, for which funds were secured from a bank on the joint and several note of the members of the association. There is no share capital. The indebtedness is being paid off at the rate of about \$1,000 annually, so that it will take over 50 years to pay for the building and equipment. It may be remarked in that connection that these buildings are so well put up and so permanent in every respect that they will be practically as good as ever at the end of the 50 years. That is one way in which the Dutchmen show more wisdom than we do in this country. A feature of the business end of the organization is that the patrons vote according to the number of cows from which they supply milk. The quantity of milk received at this factory in 1906 was 9,041,296 pounds from 1,150 cows, or an average of 7,860 pounds each. Both butter and cheese are made on the following plan. The milk is received twice daily. A portion of the cream is removed by a gravity method similar to the old Swedish 'Swartz' system. The cream is skimmed in a sweet condition and pure culture is added to it after pasteurization. The half skim milk thus obtained is manufactured into Gouda and Edam cheese. The patrons receive about \$1 per 100 pounds of milk. The cost of manufacturing is about 10 cents per 100 pounds of milk.

BAD WATER SUPPLY.

Probably the most serious drawback which the Dutch dairymen have to contend with is a lack of a good water supply. It is mostly surface water, more or less contaminated with sewage.

AN INTERESTING COUNTRY.

A visit to Holland must always be a delight to an observant person. The student of history will find much that will interest him in the scenes made famous in the long and stirring record of this sturdy and valiant people; the student of art may revel in the wonderful picture galleries, hung with the most celebrated canvasses by the great masters Rembrandt, Reubens, and a host of others, and in the quaint but stately mediæval architecture; the engineer will be interested in the great system of dykes by which large areas of the most productive of land have been reclaimed from the seas, and which prevent its encroachment at all times; the student of agricultural economics, particularly in relation to dairying, the national industry, cannot fail to see many things that will interest and instruct him. While it is true that labour and other conditions differ so materially as compared with those which prevail in Canada as to make it impossible for us to copy or adopt much in matters of method or practice, there are many underlying principles in their practices which are worthy of careful study. The true spirit of co-operation has been accepted by these so-called conservative Dutchmen to an extent scarcely thought of by Canadian farmers. The foresight and sense of real economy displayed by them in providing suitable and permanent buildings and equipment for carrying on their business, furnish us with a standing example that should not be lost sight of. There is much to be learned from a visit to the Netherlands.

THE SECOND INTERNATIONAL CONGRESS OF GOUTTES DE LAIT.

(PROTECTION OF INFANT LIFE.)

As this Congress was held at Brussels just before the International Dairy Congress at The Hague, I was instructed to attend it as a representative of Canada. The sessions of the Congress were held in a beautiful hall of the Palais des Academies. It met in accordance with the decision of the First Congress of 'Gouttes de Lait,' which was held in Paris in 1905, and of which it was a continuation, so to speak. The

first 'Goutte de Lait' was organized at Fécamp in 1894 by Dr. Léon Dufour, for the purpose of combatting the excessive mortality of the infants in that city who were artificially nursed, especially those in the poorer classes. Professor Budin had previously, in 1892, established in Paris a 'Consultation de Nourisson.' Dr. Eugene Lust, the secretary of the Brussels Congress, founded an institution in Brussels in 1897, having for its object the prevention of the excessive infant mortality so prevalent in that country, under the name of the 'Laiterie Maternelle' (Mothers' Dairy). These examples were followed and similar institutions were founded successively at Hodimont, Antwerp, Liège, Ghent, Charleroi, and to-day they exist in many localities in Belgium. The Brussels group alone numbers fourteen. These various institutions, which are generally referred to by the name of 'Gouttes de Lait,' have been instituted for the purpose of preventing or decreasing infant mortality by (1) giving advice to mothers, (2) by encouraging breast feeding, and (3) by giving carefully prepared milk to those infants for whom breast feeding is either impossible or insufficient.

It is said that in Belgium at one time one quarter of the 200,000 children born annually, died within a year, but that the percentage of mortality has been very materially reduced since the establishment of these institutions for the education of mothers and the supplying of wholesome milk, especially to the poorer classes.

The delegates to the Congress numbered over 600, and came from 29 different countries.

As the proceedings of the Congress and the questions discussed in the various sections belong to the realm of medical science, or hygiene, rather than to dairying, it does not seem advisable to make any extended reference to them in this report. Those readers who may desire to obtain a full report of the proceedings and papers (in French only) may secure them by applying to the general secretary, Dr. Eugene Lust, Rue de la Limite 27, Brussels, Belgium.

An effort was made to extend the scope of the Congress by the formation of an International Union of Institutions for the Protection of Child Life, with correspondents in practically all civilized countries. Dr. E. Pelletier, 9 St. James St., Montreal, is the Canadian correspondent, and I am sure he will be pleased to give full information regarding this very important movement.

It was decided that in future the congresses should be called 'Congress for the Protection of Infant Life,' with the words 'Gouttes de Lait' as a sub-title.

We have in this movement another evidence of the world-wide awakening to the importance of producing and handling milk under strictly sanitary and hygienic conditions. The old standards are no longer acceptable.

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